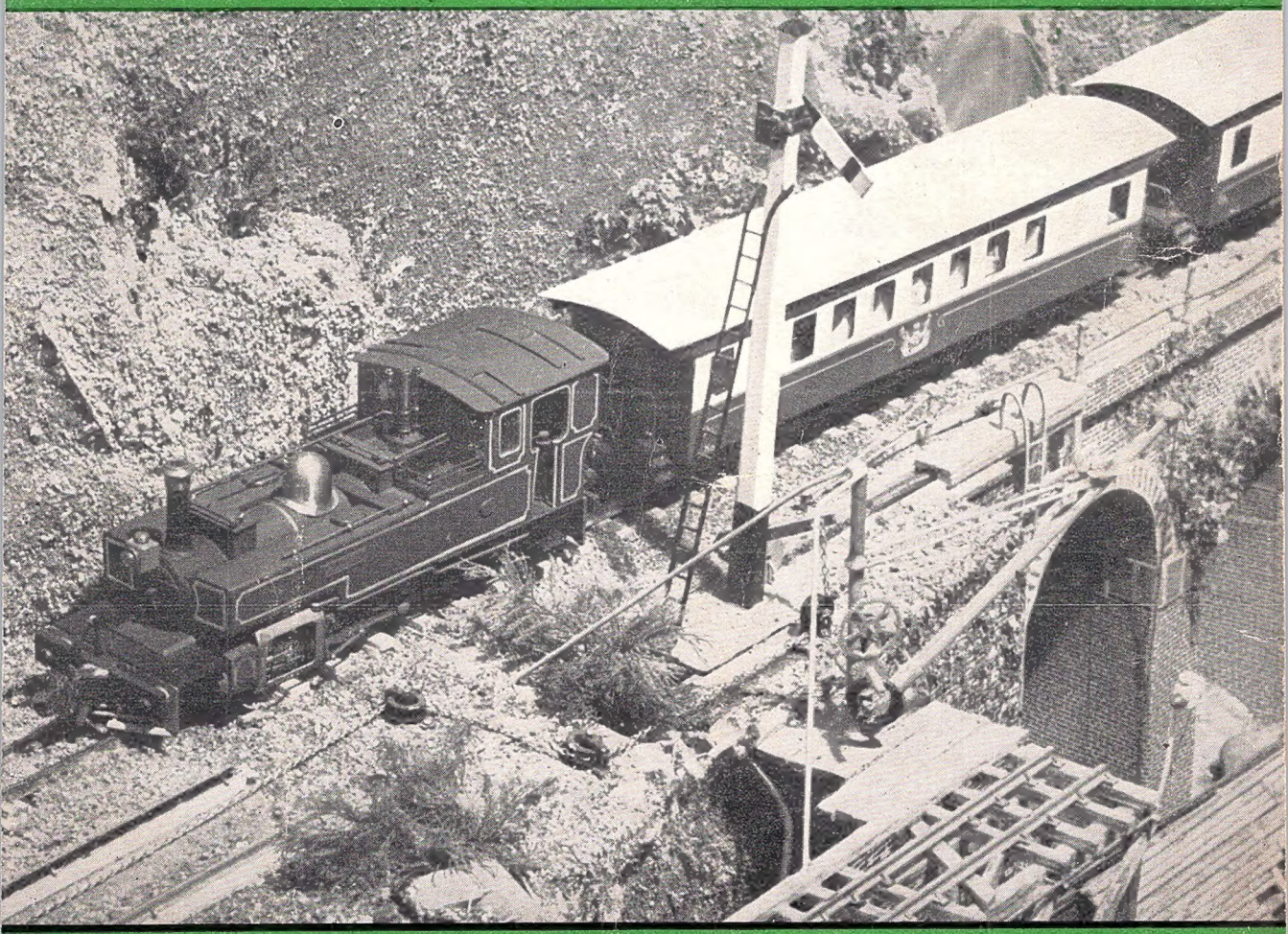
RAILWAY MODELLER

NOVEMBER 1955



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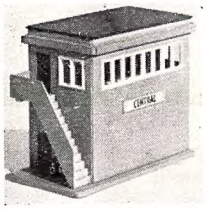

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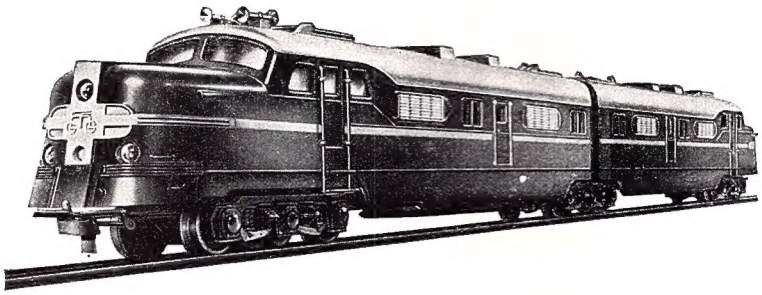

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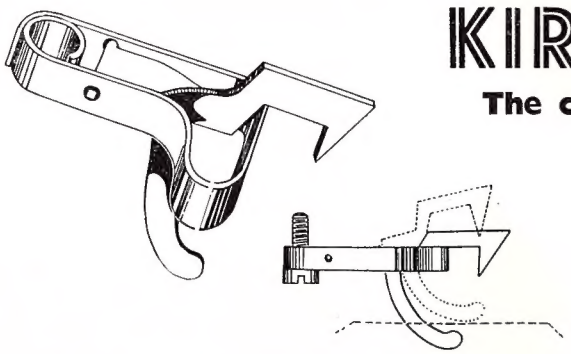

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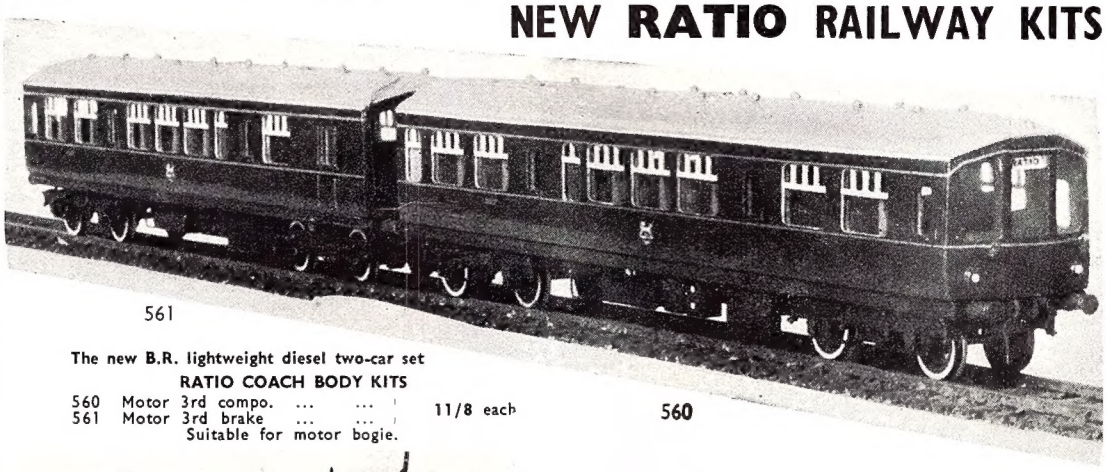

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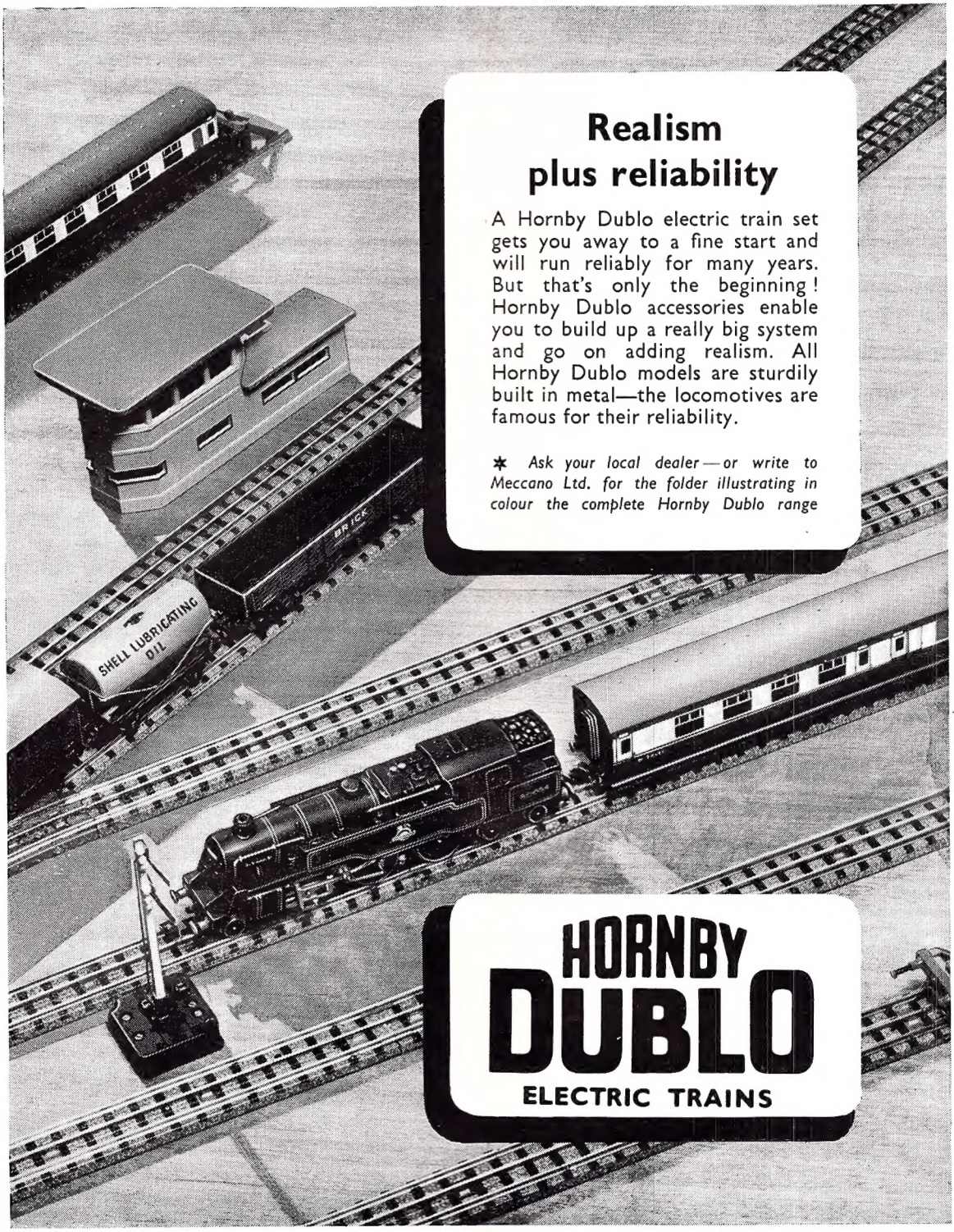

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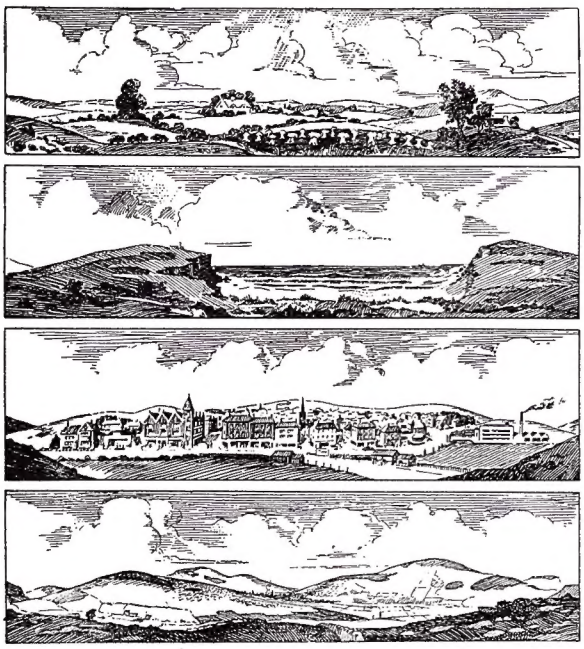

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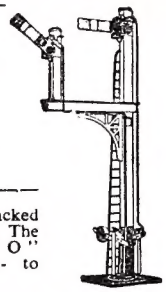

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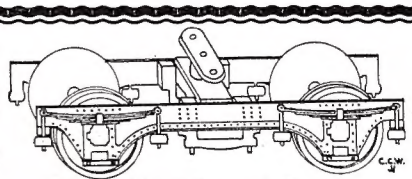

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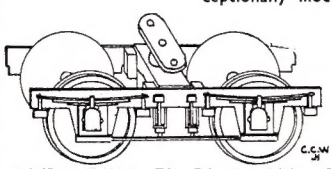

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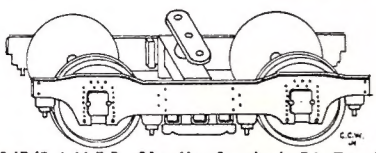

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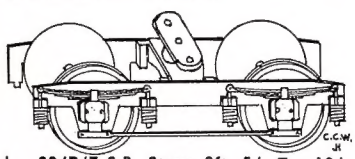

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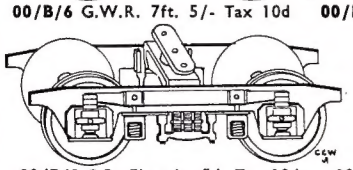

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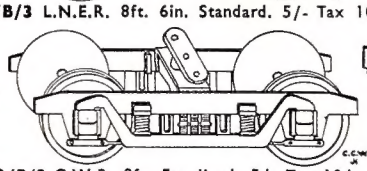

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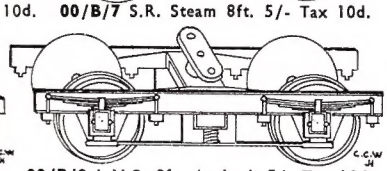

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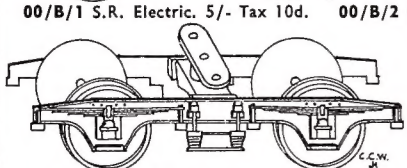

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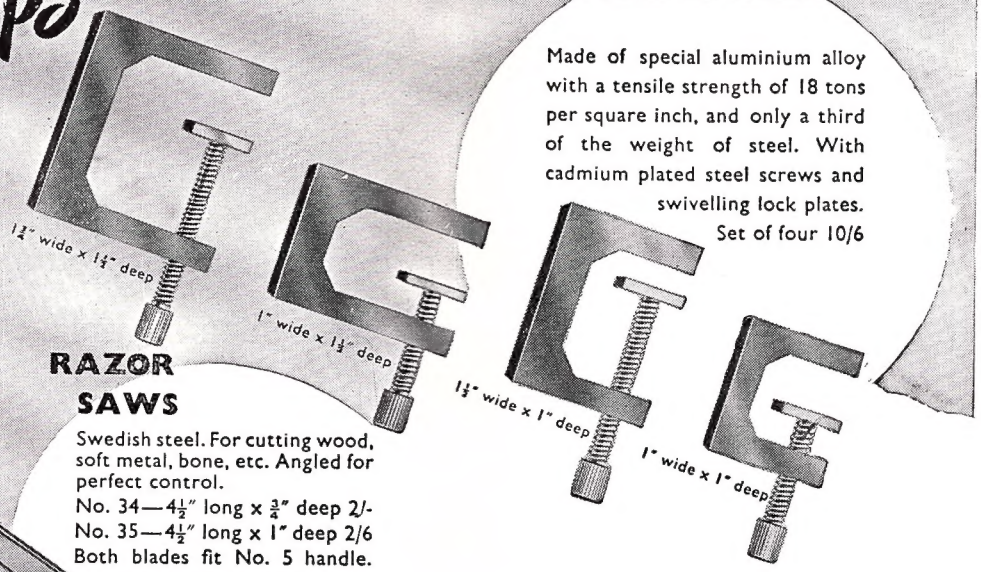

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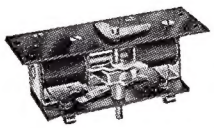

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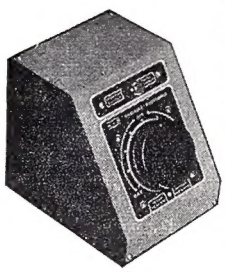

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NEXT MONTH

Once again our December issue will be enlarged and will contain a preview of the hobby's big Christmas event, the Manchester Model Railway Society's annual exhibition. Other articles will include notes by Bob Inkster on his BoBo, which will be running on the club "O" gauge track at Manchester, and a special feature for beginners.

THE LOBBY

WE were happy to attend this year's record assembly of over 100 enthusiasts from all parts of the country which forgathered at the Imperial Hotel, Birmingham, on October 2 for the Fifth Conference of Model Railway Clubs. It would be quite impossible for us to list the clubs represented; the London contingent alone included members of no less than twenty-one different societies!

The business session lasted about an hour and Pat Garland was once more chairman. Many subjects were discussed: the advisability of a higher standard voltage, whether or not there was undue emphasis on proprietary equipment in the model press, how we were affected by TV suppression—these were all dealt with fairly quickly. Then the question of federation—a hardy annual—arose.

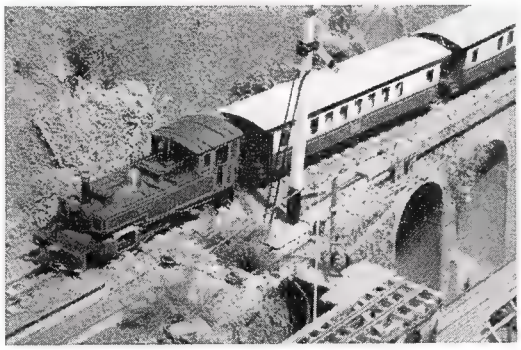
The feeling of the meeting was definitely against formal federation; largely because it was felt that the existing arrangements whereby clubs entered into mutual agreements based on established friendship was more suited to the British temperament. Furthermore, any federation must inevitably split the organized side of the hobby into two camps, the federation and the rest, while the existing Birmingham conference fulfilled the major function of any federation by bringing together representatives of most major societies, without the need for an elaborate central organization or rules which might restrict the individual freedom of the clubs.

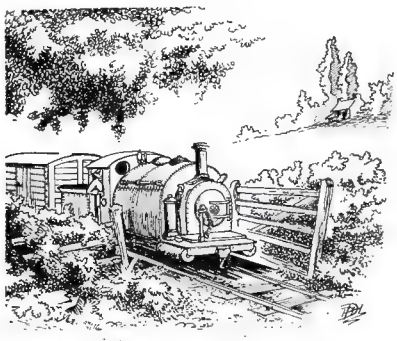
Finally, Leicester raised the important question of the insurance and safe packaging of loan exhibits at exhibitions. From the ensuing discussion it was apparent that not only were many models being insured twice, but most enthusiasts set an unnecessarily low value on their models. It was suggested that, while it is impossible to set a monetary value on a labour of love, all models should be insured for the sum it would cost to have a replacement constructed professionally—a minimum of £50 for a tank and £80 for a tender locomotive being suggested. It was generally agreed that, unless prior arrangements to the contrary were made, the visiting club should insure its models against all risks and arrange for transport, the sole responsibility of the exhibiting club being the provision of suitable stands and the stewarding of all exhibits.

We feel sure that this annual meeting, now firmly established, is proving invaluable not only to the organization of the hobby, but to the promotion of railway modelling in Britain.

COVER PICTURE

This shot of Mr. P. D. Hancock's Craig and Mertonford seemed too good to keep on the cover only, so we have, as an experiment, repeated it in the text. Readers' reactions would be welcome.





The Railway of the Month

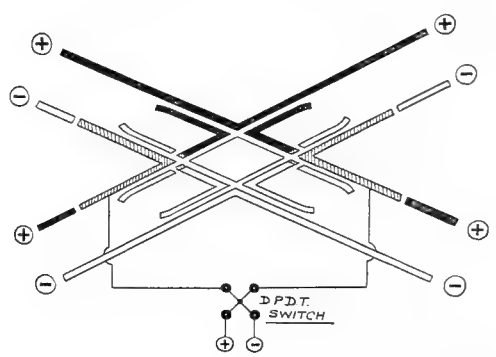
DEVELOPMENTS ON THE C.M.R.

by P. D. Hancock

LIKE all good railways, the Craig and Mertonford Light Railway* continues to grow, and if readers came to compare the plan which accompanies this article with that which appeared in the RAILWAY MODELLER for April 1954 they will see that progress has been quite considerable. As a matter of fact, the railway now circles the room in which it is situated, and what was once a bedroom with a model railway in it has now become much more like a model railway room which just happens to have a bed in it! What the household authorities have to say about this change does not bear repeating!

Needless to say, Mertonford itself has not yet materialized—I doubt if it ever will—but the line now continues from Ormistone as far as the shale mines at Glenmuir, and it is supposed to carry on from there for a further two or three miles into the Craigshire hills. In actual fact Glenmuir is the new terminus of the railway, but a removable "lift-in" section has been built so that the line can be joined up to Craig whenever the management gets a fit of devilry, and feels that it would like to operate a continuous run for a while!

The extension of the line from Ormistone necessitated the construction of a new section about three feet long, which sits on top of a bookcase and carries the rails as far as the window. A lifting bridge is attached to the end of the section and this meets up with a hinged flap attached to the new Glenmuir section. Glenmuir itself is built on a semi-portable framework six feet long by one foot broad, and this sits on top of two more bookcases which lie against the far wall of the room.



Basic circuit diagram of a two-rail diamond crossing with live frogs.

Possibly the main feature of interest at Glenmuir is the diamond crossing which has been installed where the siding to the shale mine crosses the main line. Originally the frogs on this crossing consisted of little Tufnol blocks, and they were thus completely insulated. This certainly simplified construction, but, at the slow speeds usual on the C.M.R., locomotives showed a decided tendency to stall at the crossing, and it was decided to rebuild it with no dead spots whatsoever. This, of course, necessitated a switch to change the polarity, but the installation of the switch proved to be a surprisingly simple matter (see diagram), and the results were well worth while. Locomotives can now crawl over the crossing with hardly any interruption at all in the current pick-up, and after this experience I would certainly never dream of going back to dead frogs.

Apart from the crossing there is nothing of particular interest in the trackwork at Glenmuir. In fact the layout is remarkably simple—too simple, probably, for what is really the terminus of the C.M.R. It has indeed been specially designed in order to make the reversal of a train just about as difficult as possible, and so add to the spice of operation! However, there are times when I feel that I have perhaps gone a little bit too far, because the task of reversing a passenger train of four coaches involves not only the help of a second locomotive, but also the shuttling to and fro of coaches for about ten minutes—all very fine and enjoyable in its way, but there are times when I would like to get things done in a hurry, and at some time in the future I may add an orthodox run-round to the length of track on the removable section.

I shall also have to add a run-round, or at least a fairly lengthy siding, at Ormistone, since the layout there had to be completely re-aligned when planning the extension, and this did away with the original dual-gauge run-round. I have every intention of restoring this eventually—but not just yet. Dual-gauge pointwork is a little bit too much like hard work for my liking, and I shall need to wait until I have plenty

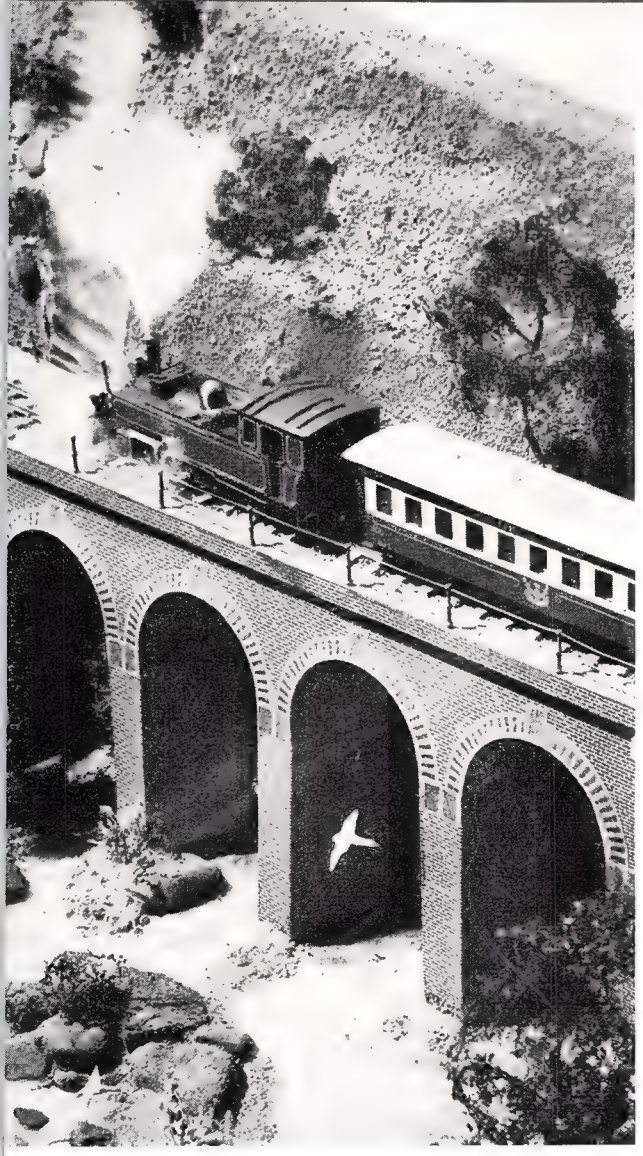
* The C.M.R. is a 4mm.-scale narrow-gauge railway with a track gauge of 9mm.

Glenmuir viaduct with "Angus" and the early morning train from Mertonford. The coaches are the first two completed out of a set of four. They are adapted from Kemtron D. & R.G.W. photo-engraved brass coach sides, are painted white and maroon with yellow ochre striping, and have engraved name boards supplied by K's Ltd.

of spare time and am feeling in a particularly good mood before I tackle this particular task!

Incidentally, the track from Ormistone to Glenmuir is not laid with Peco small-section conductor rail as it is elsewhere on the layout, but with ordinary "OO" flat-bottom rail which is spiked to wood sleepers *à la* prototype. Now, in some respects this is a retrograde step, since the rail section is really far too large for any self-respecting narrow-gauge railway. On the other hand, this fact is surprisingly unnoticeable in so small a scale as 4mm. to the foot, and the use of the higher rail does enable track spikes to be used in the normal manner. Thus the construction of a really "super-detailed" narrow-gauge track becomes possible, and the gain here more than compensates for the slight departure from scale. Mind you, I did not adopt this procedure without considerable thought, and I quite realize that what I have done would not suit everyone. It all depends, really, upon what one wants from one's layout—and I wanted a bit of "real" narrow-gauge track somewhere or other on the C.M.R.—a bit of track, that is, which would be laid on rotting, uneven sleepers, with spikes on every sleeper, and grass and weeds growing up between the rails. Well, I tried to get this effect using the small-section rail, but could find no track spikes small enough to avoid being fouled by passing wheel flanges. So that brought me to the large-section rail. I also experimented with sleeper strip and sponge-rubber bases in an effort to get a quieter track, but the task of combining a fully spiked and sleepered track with the resiliency of a rubber base proved too much for me, and I fell back on the oldest method of model track construction of all—plain wood sleepers fastened direct to the baseboard. Admittedly this is not a quiet track by any means, but then I am

Ormiston station. The building is an adapted Triang/Rovex model, and the crane is from a Woolworth toy dump truck. Note the rock outcroppings of natural cork bark.

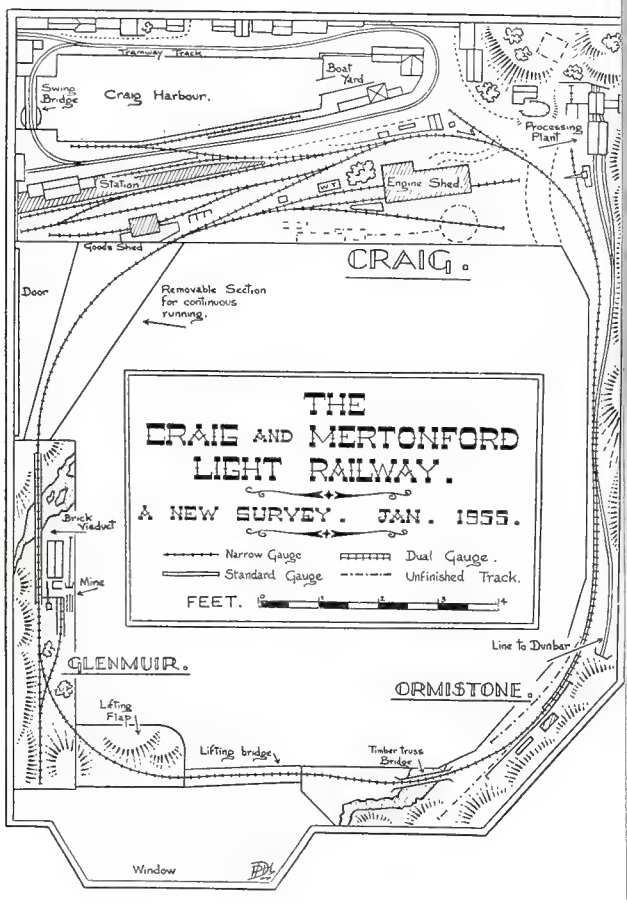


Above: "Alistair" and her train rumble majestically over the Glenmuir viaduct, and a fight of swans rises in wild alarm from the river below.

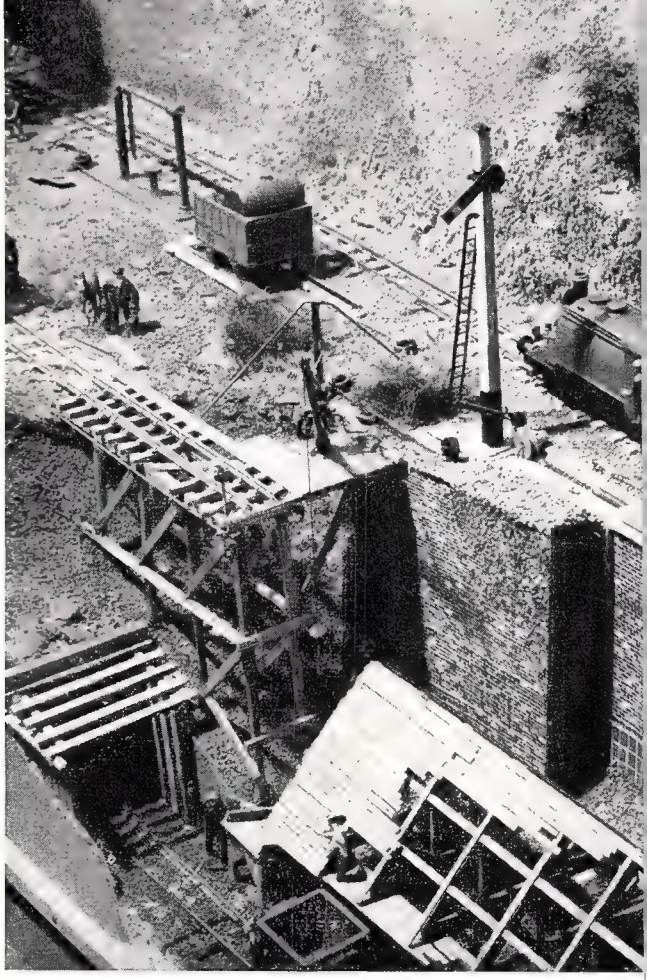
Below: Close-up of a portion of overgrown track at Glenmuir. Also Andrew McNab taking forty winks.

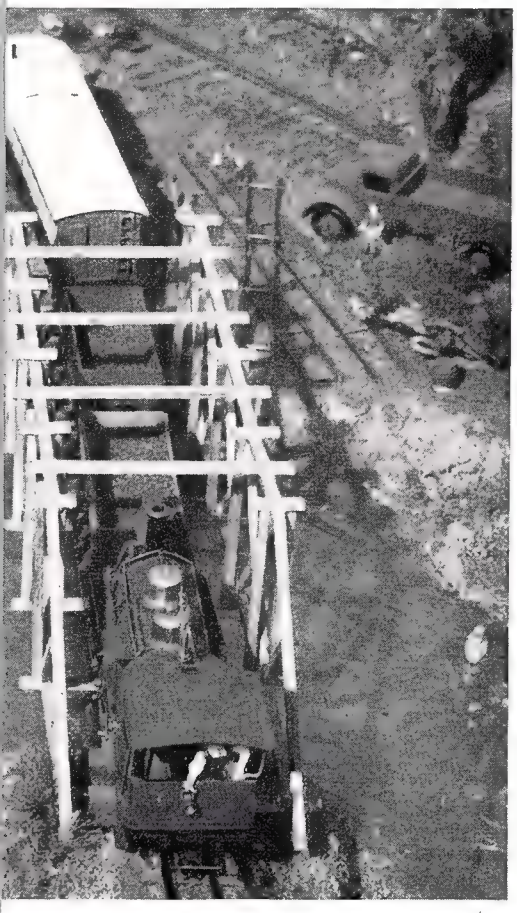
inclined to think that one can perhaps go a little too far in the search for quietness, and some of the rubber-based tracks I have seen are almost *too* quiet for my liking! As it is, the track on this new section of the C.M.R. is laid on fairly thick wood, and this helps to dampen the sound quite a bit. In fact, it is my own personal opinion that things sound just about right as long as I remember to keep trains to a nice scale 20 m.p.h. or thereabouts—and this is quite fast enough for a 2ft. 3in. gauge line.

Goods trains can travel even more slowly than this, and I must confess that I get quite a kick out of watching—and hearing—a train of trucks and small hoppers jolting up the line from Ormistone to Glenmuir. Well, perhaps "jolting" is not quite the right word—my trackwork is not as bad as all that! But at least the trucks clatter and sway as they pass over the points, and the wheels squeak protestingly as the train heels into a tight curve, and the locomotive begins to pant as it ascends the gradient. Pant? Yes, that is quite correct. Nearly all the C.M.R. locos have some peculiar mechanical deficiency—perhaps the worm wheels are not concentric—which gives them quite a pronounced "chuff" when they are running slowly. This, allied to the "clanking"—faint but



audible—of the valve gear, gives a most realistic effect. The valve gear clanks, by the way, and the wagon wheels squeak, because they are unoiled. I used to oil both motion and wheels, but about a year ago I got completely fed up with the task of unwinding hairs and fluff from axles and pivot pins, and decided that in future the only parts of the C.M.R. stock which would receive oil would be the locomotive worms and worm wheels. The results have been highly gratifying. Wagon maintenance has been reduced to the periodic cleaning of wheels and an occasional blowing away of dust, while the locomotives now "sound" much more like the real thing. Admittedly there is a bit more friction to be overcome in getting a train away than there would be if the wheels were all freshly oiled, but then this friction remains constant, whereas the running of oiled stock —especially in a bedroom—tends to deteriorate day after day until it becomes well-nigh hopeless and one just has to get down to it and have a spell of axle cleaning. No doubt the friction caused by unoiled bearings could be harmful if stock were run for hour after hour; but then it never is on the C.M.R., and I shall know when to stop—just as soon as I see smoke and sparks rising from the wheels of a train!

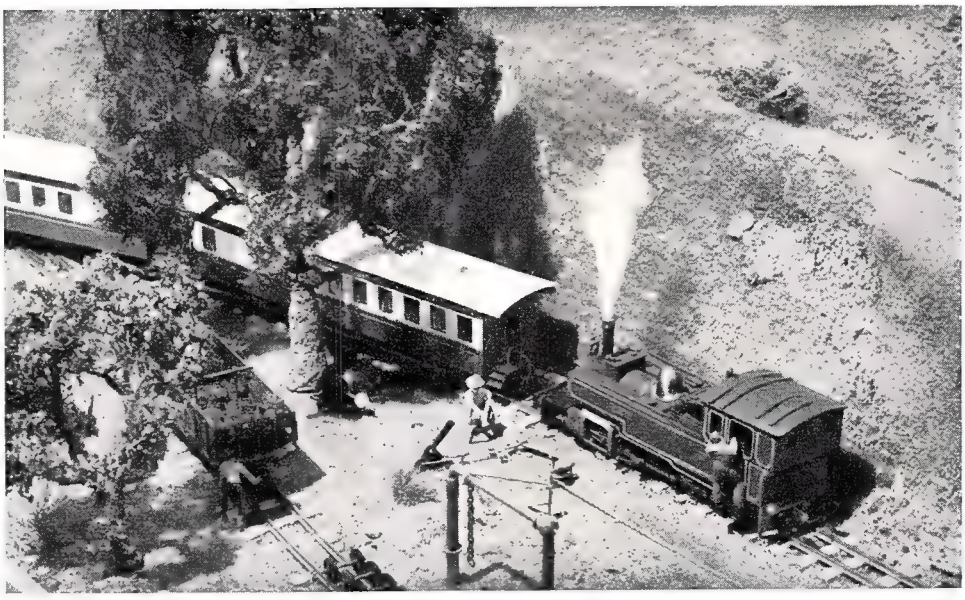




Above: Glenmuir shale mine. Once derelict, this mine is now being brought back into use, and work is in progress to rebuild the ruined offices and workshops.

Left: "Agnes" and the afternoon train from Craig crossing the small timber truss bridge outside Ormistone.

Below: Another view of "Agnes," the C.M.R.'s latest locomotive.



" Alistair " prepares to pull out from Glenmuir en route to Mertonford.

Other developments on the C.M.R. include the construction of several new items of rolling stock, some of which appear in the accompanying photographs. However, I do not intend to say anything about these here, since, with the Editor's permission, I hope to deal with them in a future article. Nevertheless, mention might be made of " Agnes "—our latest locomotive. This is a 2-4-0 of obvious transatlantic origin, and the C.M.R.'s books credit her, somewhat optimistically, to the Baldwin Locomotive Works—though whether they would really be prepared to admit responsibility for her is another matter! The story behind her construction has a certain interest, since she was designed in order to use up as many as possible of the odd locomotive fittings which I had acquired from time to time through the generosity of Leven Kemalyan of the Kemtron Products Co. of Fresno, California. Hence the cowcatcher, large oil headlamp, and generally American appearance.

The headlamp is large enough to house a twelve-volt pea bulb, and " Agnes " is thus the first locomotive on the C.M.R. to acquire the distinction of a working headlight. She also has a light in the firebox which shines through a piece of red celluloid. Both these lights can be switched in or out of circut by means of a small switch at the front of the locomotive, and the various wires which wander along the side of the saddle tank are optimistically assumed to be steam pipes which have been added in the C.M.R. workshops for one reason or another. The chassis of the locomotive is adapted from an American Lindsay " Stubby " diesel locomotive, and the motor is a Lindsay L580—a magnificent little job with, among other things, a totally enclosed and screw laminated seven-pole armature.

While on the subject of locomotives, our Lynton and Barnstaple type 2-6-2 has at long last been lined out. This was a job which I had put off doing for years, simply because I was afraid of making a mess of it. However, Mr. Gavin Wilson of Wormit, Fife, recently gave a talk on the painting and lining of locomotives and rolling stock to the Edinburgh and Lothians M.R.C., so I plucked up courage and had a shot at it. The secret seems to be to use a fine mapping pen and ruler for the main, thicker lines, and to put the thinner lines on top of this with a 00 sable brush. If one's stock is painted with cellulose paint one can do this lining in oils, and " rub out " any mistakes with turpentine, but if oil paints have been used for the stock one will just have to line out with water colours or poster paints, and protect the finished job with a layer of clear varnish. I myself use oil-bound paints for most jobs and am slightly distrustful of the usual run of cellulose paints. However, some years ago I acquired a jar of green cellulose paint which was just the colour I wanted for the C.M.R. locomotive stud. What was more, it turned out to be the most marvellous cellulose paint I have ever come across. It did not dry *too* quickly, it flowed nice and evenly over any surface, and it has never formed a skin in the jar during all the years I have had it. Unfortunately I am now nearing the end of the jar, and I cannot replace it since I do not know the name of the makers. So if any reader is acquainted with a make of cellulose paint with the above-mentioned qualities, please let me know—quickly!

The other locomotives of the C.M.R. continue to give gallant service, although " Ian " is temporarily out of commission due to a crank having worked loose on the end of one of the axles. Since the axle is a Peco insulaxle, and the crank is secured by means of a thread and lock-nut, this looks as though a whole new wheel assembly will be called for. " Duncan," our somewhat notorious vertical-boilered 0-4-0, has had hard service these past few months, and a special light-weight work vehicle has now been constructed so as to be within her limited hauling capacities. Attached to this, " Duncan " can

"Alistair," resplendent in her new livery, pulls into Glenmuir. The signal is mechanically controlled from the Glenmuir lever frame by wires and chain passing round S. & B. ground pulleys. The signal lamp is lit on the reflected light principle.

now amble around the entire circuit of the C.M.R. at a steady top speed of about two scale miles per hour. This takes her fifteen minutes dead—so we do not indulge in the practice too often!

At Craig itself the outstanding development has been the recent installation of a complete circuit of tramway track, and work on this is still going on. As a matter of fact, it is at Craig that most work still remains to be done, and many of the buildings are still in a partially completed state. The company has not even got around to finishing the station buildings, and the passengers waiting on the platform are becoming a little fed up with the constant delays and excuses of the management. So, in spite of the progress made since last April, there still remains a great deal to be done on the C.M.R., and I do not think the day will ever come when we shall be able to report that the layout is "finished." And, after all, who really wants a layout on which there is no more work left to be done? Why, one would just have to pull it up and start all over again!

A glimpse of the recently installed tramway system at Craig. The track is Peco small-scale conductor rail glued to card base, and it has not yet been inset into the roadway.

How to Build

A MOTORIZED TURNTABLE

by F. Reynolds

IT may be of interest to readers to have particulars of a turntable with self-locking remote control which has been in operation without giving any trouble on my "OO" gauge two-rail layout for the past few years. Fig. 1 is a general view in part section of the turntable. Fig. 2 is a side view of the operating gear, and Figs. 3, 5 and 6 are plan views of the same gear in different operational positions. Fig. 4 is an end view of one of the catch plates and its mounting on the turntable driving disc. Any number of these catch plates can be used according to the number of tracks run off from the turntable and they must be carefully positioned so that the track on the turntable lines up exactly with the corresponding track on the baseboard proper. The final lining up of the tracks is made easier if the holes in the brass angles, shown in Fig. 4, are slotted to allow for some adjustment before tightening up. Put large washers under the screw-heads. Figs. 2 and 3 show the turntable locked by means of the bolt A engaging with the catch plate B. The switch contacts C are open so that the driving motor is stationary, the power circuit from the controller to the rails on the turntable is complete through the contacts D, and the operating lever E is in the off position.

To set the turntable in motion the lever E is pulled full over. This draws the bolt A back clear of the catch plate B as shown in Fig. 5 and at the same time the contacts C are closed, which starts the motor, and the contacts D are drawn clear of the angle pieces on the driving disc. As soon as the turntable is moving the lever E is released to engage in the slot in the lever frame as in Fig. 6. The turntable will continue to move until it is stopped by the next catch plate coming in line with, and engaging with, the bolt (see Fig. 6). The lever E is then returned to the off position, which locks the turntable, stops the motor and closes the contact A for current to pass to the running rails.

It will be noted by reference to Fig. 1 that the motor platform is shown supported at one end by a free-moving hinge. This is in order that the weight of the motor is available for giving the necessary adhesion between the rubber on the driving shaft and the turntable driving disc. A small 12-volt D.C. motor is used and the worm and gears are from an old clockwork gramophone turntable drive.

The friction drive to the turntable is recommended in preference to a more positive form of drive because it allows slip to take place when the turntable is locked and the motor can continue to run without damage to the gears.

On my layout the turntable is about three feet away from the control panel, but as bowden cable is used it will be obvious that the control point can be any distance away.

A satisfactory alternative to bowden cable is to use the fine stranded steel wire as used for the control of tethered aeroplanes in an outer casing of flexible curtain rod as sold at most general stores.

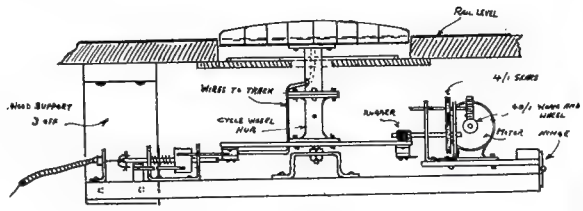


FIG 1

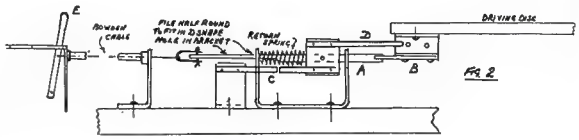


FIG 2

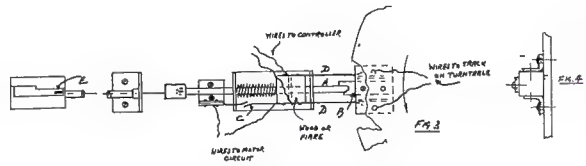


FIG 3

FIG 4

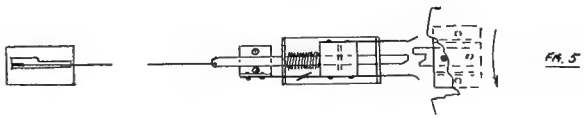


FIG 5

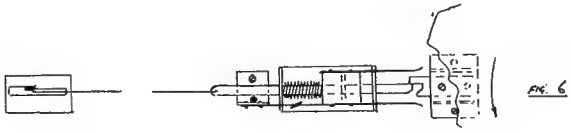


FIG 6

How to Make

A TUNNEL THROUGH ROCK

by G. Pember

TO make a longer run for the main single line of my gauge "OF" layout in an attic bedroom, two holes were cut in a wooden partition wall so that the line could run into and out of the adjoining roof space. This formed a natural tunnel and called for the provision of suitable tunnel mouths. To save space which would have been taken up if these mouths had been approached between sloping grass embankments, it was decided to form them in a steep rock face which could be continued along the partition wall for some distance on either side. They were built up as two units on wooden frames and were subsequently fixed in place.

The track comes through the partition wall at a fairly acute angle relative to the wall at each end. At one end I was able to make a simple L-shaped framework of two pieces of plywood, the horizontal part resting on the baseboard and the vertical part against the wall. At the other end a shelf fixed to the partition came in the way and the lower piece of plywood had to be cut in the shape of a trapezium instead of a rectangle. The vertical plywood was then cut into two pieces, as shown in Fig. 1, and only the sloping piece is in contact with the wall. The framework was strongly braced, the joints being screwed and glued.

A short length of tunnel was then made up, using three pieces of wood from a grocer's box cut to size and screwed together to form a framework for the sides and roof. The top corners were then filled with triangular-shaped pieces of wood, as shown in Fig. 2, to give better support and shape to the linoleum lining which was to be fitted later. The front of this bit of tunnel was faced with a rectangular piece of plywood, out of which the entrance had been cut with a coping saw, and carefully smoothed. For those who may not have come across it, a coping saw is like a small fret-saw but uses much tougher blades. These can cut through thicker wood, but cannot go round such sharp corners as the finer fret-saw blades. The entrance hole was made smaller by the thickness of the lino than the framework behind it, so that when the latter was fitted it would come flush with, and exactly follow, the shape of the entrance. As the roof of the tunnel was to be in contact with solid rock it was decided to make it semi-circular, with vertical walls, rather than one of the special shapes designed to resist considerable pressure from loose earth. This is shown in Fig. 3.

To the wooden entrance was now stuck, with Bostik, a piece of cork lino, cut to the same outline and grooved to represent the large hewn stones with which the entrance is faced. The grooves were cut with a fine-bladed Swann-Morton craft knife, the edge of which is like a safety razor blade, care being taken to cut the stones in a wedge shape for the arch, with a larger key-stone in the centre. The cork lino gave just about the correct degree of roughness for the stones, but ordinary smooth lino roughened with sandpaper would no doubt do as well.

The inside of the short length of tunnel was then lined with ordinary cheap linoleum, bent to the same contour as the entrance and fitting flush inside it. This lino was also stuck with Bostik applied to its backing paper. Before the tunnel was screwed to the base it was given a coat of "soot" on the inside. This hid all traces of pattern and colour in the lino. As paint does not look sooty enough it was decided to try the real thing! A small paraffin lamp, used to light the stairs in times of electric power cuts, was lit and the wick turned up high to give a nice smoky flame. When the tunnel was moved about over the

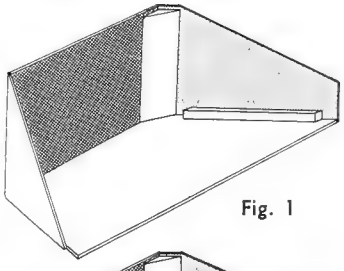


Fig. 1

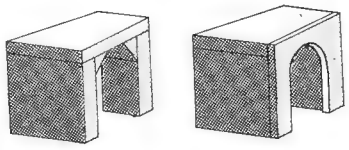


Fig. 2

Fig. 3

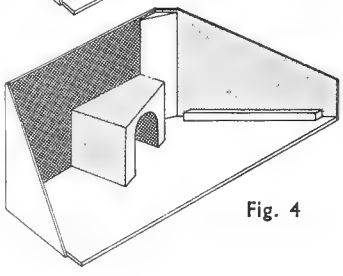


Fig. 4

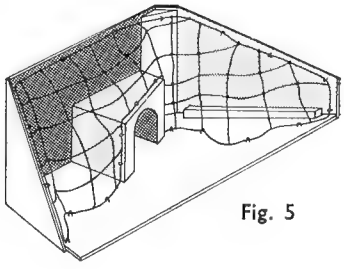


Fig. 5

flame the lino soon became covered with a lovely coating of genuine soot! Similar treatment was later applied to the " stone " facing at the entrance, and it must be admitted that some doubt was felt as to whether such soot would be too easily rubbed off by accidental contact. Early experiences were not encouraging, as within a short time of the freshly sooted tunnel being placed on view in an exhibition a small boy removed a good portion of soot by drawing his finger across the tunnel mouth, thus producing a green streak in the wrong place. However, it was found that in time the soot hardened and became quite resistant to rubbing, so the experiment was justified.

Owing to the acute angle at which the track leaves the partition wall it passes through the vertical part of the main tunnel framework, which is not in contact with the wall. A hole was, therefore, cut in this to register with the piece of tunnel just made, and as this also met it at an angle the hole had an elliptical rather than a circular top. The ellipse was marked out, using the back of the tunnel piece as a guide, and the hole cut with the coping saw. The two parts were then screwed together, as shown in Fig. 4, and gave a very rigid structure. The time taken to make this was considered well spent, as it was necessary to provide a strong backing for the " rock " which was to go over it.

The next stage was to make a wire skeleton which would be packed with filling and then coated with the " rock " mixture itself. For the first tunnel mouth an old wire soap basket was used. The bottom was removed and the sides were laid out first. Then the two pieces were fastened by screws and by wire to the framework, the wire mesh being fairly ill-treated in the process, so as to create irregularities characteristic of a rocky surface. The skeleton for the second tunnel mouth was built up from separate pieces of wire. This took a little longer, but it is easier to create deep clefts in the rock face and other irregularities just where you want them by this method. Some 14 s.w.g. copper wire was used for the main wires running up and down the rock face. These were soldered to two similar wires following the top and bottom contours respectively. The contour wires were stapled to the framework and their shape is very important. The position and depth of any clefts in the rock must be indicated by V bends in these wires before they are finally fixed in place.

The horizontal wires completing the mesh were made of much thinner gauge, about 24 s.w.g., for ease in threading round the others. At each meeting point with the verticals the horizontal wires were given a turn round them to give greater rigidity, and a certain proportion of the joints were soldered. The wire followed all the indentations that were to appear in the final rock surface, and when the skeleton was complete each mesh was about 1in. to 1½in. square. This is shown in Fig. 5.

It was intended to use "Alabastine " filler, obtainable at any wallpaper shop, to represent the rock, but to reduce the amount required the inside of the skeleton was first stuffed with crumpled paper, both newspaper and some surplus wallpaper being used. Care was taken not to deform the skeleton during stuffing, nor was any paper allowed to poke out between its " ribs." Before applying the "Alabastine," experiments were carried out to find a suitable way of painting it. It was discovered that when using oil paint, obtained in tubes from an artists' supply shop and heavily diluted with turpentine substitute, a much better effect was obtained if the plaster was painted when still damp. The colour soaked in very well and gave a more uniform effect than when the paint was applied to dry plaster. In fact, with really dry plaster it did not take at all well and I found it difficult to avoid the appearance of " painted plaster," which was just what I wanted to avoid !

As each tunnel was to be plastered and painted in one operation I had to do them when I was reasonably sure of several hours clear without interruptions, and in daylight for better lighting and colour matching. I tackled them, therefore, on two separate Saturday afternoons, starting immediately after lunch and working solidly for four hours (without a tea break!) until the job was done. Each tunnel mouth took about 8lb. of "Alabastine," which was bought in 3lb. or 5lb. packets, as it works out much cheaper than buying a lot of 1lb. packets.

About one pound was mixed at a time, with water, to give a fairly stiff paste, which was applied to the wire skeleton with a putty knife. The wires acted as both a key and a reinforcement, and they were completely covered with plaster. At this stage the main outlines and larger clefts were modelled but no details were attempted. When the skeleton was completely covered the surface was quite rough and bumpy, and many modellers are content to leave it at this, but I feel that such a surface resembles that of a rock cake rather than real rock! Observation during the summer holidays showed that a real rock surface has a myriad cracks and crevices—horizontal ones generally following the line of the strata, and vertical ones probably due to rain and frost. Little ledges, often grass-covered, appear here and there, and some of these were worked into the model. To save space I finished the foot of the rock face fairly abruptly, but with a few lumps, to suggest boulders fallen from above, dotted about here and there.

The cracks are made with a sharply spiked instrument. I used a pocket scriber the point of which had been accidentally snapped off, and which I then sharpened to a much finer point than is usual with a scriber. For some of the finer cracks I employed a large darning needle held in a pin chuck, but most of the work was done with the scriber. The horizontal cracks, following the general lines of the strata, were

put in first—not too evenly—and spaced about ⅜in. apart on the average. The vertical cracks came next, most of them being scribed less deeply than the horizontal ones. The majority were short, not extending beyond two or three stratum cracks, but a few were made long and deeper, extending from top to bottom, and making little gullies down which surface water would flow following a good fall of rain. Care was taken with the location of these gullies so that they followed a natural-looking path down the rock face.

When the cracks were finished the plaster between some of them was dug away with the scriber to form little ledges of rock, from which lumps may be assumed to have fallen due to weathering. These ledges break up the surface admirably and some of them were later covered with "grass." All this work was done as rapidly as possible, as the plaster was drying all the time, though fortunately "Alabastine" in the mass takes very much longer to dry and harden than when it is spread thinly, or used in contact with a porous surface like the wall of a room. When this operation was finished the whole surface was brushed lightly with a soft brush to remove the loose bits of plaster, and it was then ready for painting.

The colour of the paint depends on the type of rock which is being represented, but I found a light grey quite satisfactory. This was achieved by making a very dilute solution of black oil paint, obtainable in tubes costing about 10d. each. A test had already been made with a lump of damp "Alabastine" on a board to find a suitable dilution, and a few inches squeezed from the tube and well stirred into about half a breakfast cup of turpentine substitute gave the desired shade when brushed rapidly over the plaster. A single coat only was applied and this sank into the damp plaster instantly and blended with its whiteness to give the required grey. Some layers of the strata, and the ledges where grass was to be put, were lightly coloured with dilute burnt umber paint to give a little variety. This had to be done very carefully indeed to avoid a striped appearance and to blend the colour in with the grey. Some preliminary tests are desirable before trying this, and dilute paint is essential. Successive coats will always increase the density of the colour, but a dark patch cannot well be rubbed out, as the paint sinks in quickly.

The remaining operations on each tunnel mouth were carried out at leisure several days later, when the paint and plaster had dried thoroughly. A mixture of yellow, green and brown oil paint was made and the colour adjusted by varying the proportions of the three ingredients until it resembled closely that of the lawn in the back garden. Well diluted with turpentine substitute, this was used to dye some fine sawdust to represent grass. The ledges were coated with "Casco" glue and the dyed sawdust was pressed on to them fairly thickly. The surplus was lightly brushed off the following day when the glue had dried thoroughly. The wooden baseboard at the foot of the rock face was coated with "Alabastine" and painted with dilute umber to represent earth. When dry this was also coated with "Casco" in the places where grass was required and the coloured sawdust applied as before.

A green and yellow paint mixture was made up to match some moss found in the garden. This was then applied, at the usual consistency for oil paint, with a fine brush to spots on the rainwater gullies where moss might be expected to have grown.

The tunnel portals were painted stone colour, and when dry were held above the smoky paraffin lamp flame to receive an irregular deposit of soot. The deposit was made thickest at the top of the portal, over the centre of the track, and continued, with much reduced density, a little way on to the rock face above.

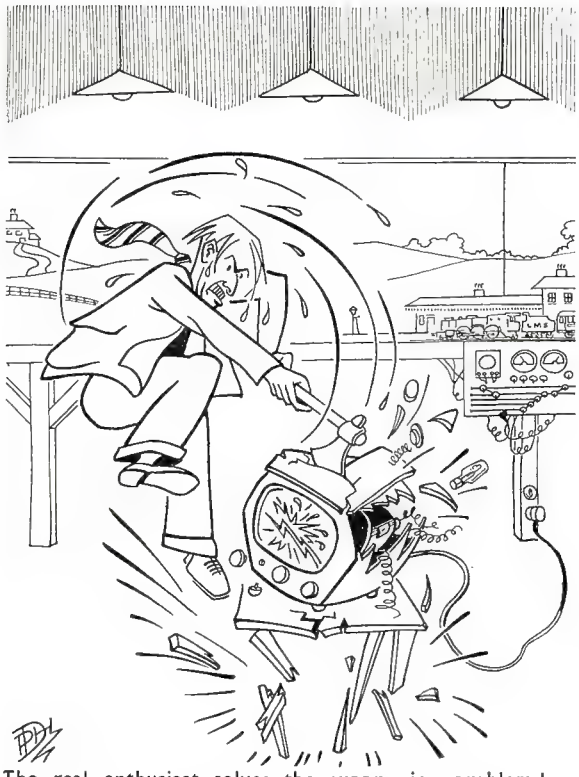
Single-line fine-scale track was laid and ballasted with fine chicken grit, coated with "Casco" to hold it in place. The track was daubed with dilute rust-coloured paint, which soaked into the ballast and removed that clean look, which is not found in tunnels! The surface of the rails was wiped clean and lightly sandpapered.

A Sykes electric banner signal was constructed to go beside one tunnel entrance, in order to repeat the indication of a signal at the far end. A hole two inches square was cut in the baseboard to receive the base of the signal, which fits flush with the ground, the operating electro-magnet being out of sight below. This signal was made from drawings kindly supplied by Mr. T. S. Lascelles.

For the other entrance a typical Great Eastern two-arm signal was made, the distant arm being correctly slotted and fitted with a dummy electrical proving switch. This signal is similar to one near West Green station, and for certain details of its construction I am much indebted to Mr. G. S. Lake, who photographed the signal and sent me sketches of it.

The constructional methods used for these tunnel entrances could equally well be applied in 4mm. scale. The amount of "Alabastine" required would be only about one-fifth of that which I used, say a couple of pounds. A needle would be just right for putting in the cracks and crevices on the rock face, and owing to the reduced volume of material required the job should be completed in a much shorter time than I needed.

The "bird's-eye" view shows the second tunnel mouth after it had been put in position with its sloping side against the wooden partition wall through which the track comes at a sharp angle. It will, of course, be joined up to, and blended in with, other rocky scenery on either side. The other photograph shows what is seen from the footplate by one of the enginemen, with whom I always populate my locos, as he approaches "Yardley tunnel."



The real enthusiast solves the suppression problem !

TELEVISION

We know from innumerable queries that the
well known that model railways can interfere
that a TV set can, in its own way, interfere
gested by P. D. Hancock on the left may n
the

AS readers are doubtless aware, it is now compulsory to fit suppressors to electrical equipment which causes interference with radio or television reception. It is important to note that this regulation does not mean that all equipment likely to cause interference must be suppressed, so that should your layout cause no trouble you have nothing to worry about. Moreover, we understand that it is not intended to apply the penalties to cases where interference has been caused by inadvertence, but rather where a persistent offender refuses to take action to mitigate the nuisance.

Unfortunately, a model railway can cause quite a large degree of interference that often seems impossible to suppress, largely because the causes of interference are none too clearly understood.

The first point to remember is that *any* part of an electrical circuit can emit radiation in the radio and television frequencies under certain circumstances. The commonest cause of such radiation is a spark, and, as will be quickly realized, there are many items on a model railway which can emit small, but none the less potent, sparks. These can be divided into three main headings, the locomotive motor, the controller and switchboard, and last, but by no means least, the track.

It has long been known that virtually complete suppression of motor interference can be obtained by wiring either a pair of dust-cored chokes into the brush leads or a .005mfd. condenser across the brushes, while in stubborn cases both cures can be applied. The circuits are given in Fig. 1.

A similar cure can be applied to the power unit and controller, as shown in Fig. 2. It is important to note that the suppressors, to be effective, should be placed as close as possible to the offending portion of the circuit—in other words, the leads between them must be kept as short as possible.

When we come to consider the track itself, the problem is intensified. It will be realized that a length of track is quite an effective aerial, and therefore it is this part of the layout that is most likely to radiate the really powerful waves that interfere with neighbouring television sets. This is a point where trial and error comes in. In mild cases the suppressors fitted to the locomotives may take care of the track—the interference is, after all, largely originating at the locomotive wheels. Further suppressors at the controller may help matters further,

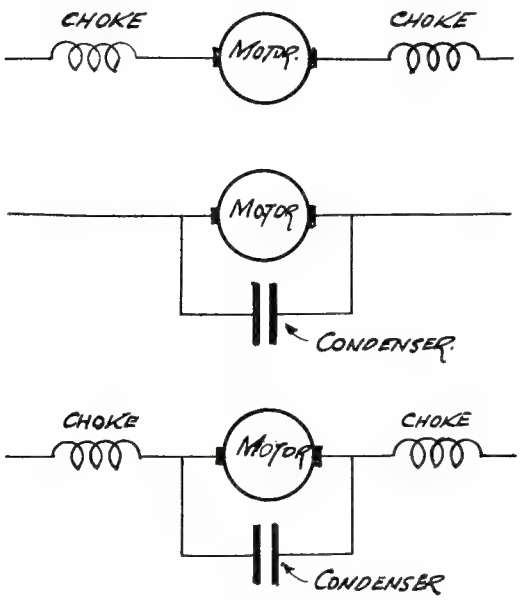


Fig 1. MOTOR.

UPPRESSION

em of TV suppression is a widespread one. It is television : what is not so clearly understood is ailway modelling. The rather drastic cure sug- possible, but it can be argued that we were on irst !

but failing this we suggest .005mfd. condensers across the track at feed points. In stubborn cases, the track may have to have condensers fitted across it at intervals, and in order to make these as effective as possible the distance between them should be one half of the wavelength of the local television station, thus damping out the radiations in the offending band. This wavelength will be found in all issues of the *Radio Times*.

Another possible source of trouble lies on the mains side of the power unit, for if the plug is a poor fit in the socket, or the leads have become loose in their fixing screws, irregular sparking can occur. This is particularly likely where the plug has to be removed at the end of operation, and therefore a regular check is advisable, not only from the point of view of possible interference, but for safety's sake as well.

A rather elaborate but completely effective cure for a permanent layout is to enclose the whole system in an earthed metal case. This has been done by painting the inside lining of the room, as well as the ceiling, with two or three good coats of aluminium paint, taking care to cover a length of bare wire which is connected to a good earth such as a water pipe. Where the room is lined, as for example in an attic, fairly close-mesh wire netting could be used.

The suppressors mentioned—dust-cored chokes (which can be obtained in various amp ratings) and condensers—can be obtained from any good radio dealer, as well as from several model shops. Free advice can be obtained from the Post Office engineers, who charge only for any fitting and for suppressors supplied. As it is impossible to distinguish the cause of interference merely by looking at the bright end of a cathode ray tube (except for car interference, which does not concern us here), it is advisable to obtain an independent time check. Thus if the interference begins only when the line is used, and ends as soon as operation stops, then it is almost certain to be the offender, but should the times be widely divergent it is probable that the source of trouble is elsewhere. We stress this point because, in common with vacuum cleaners and electric irons, model railways are popularly supposed to be chronic offenders even though the real cause may be a faulty light switch in the complainant's home or, worse still, a loose lead to the television set itself!

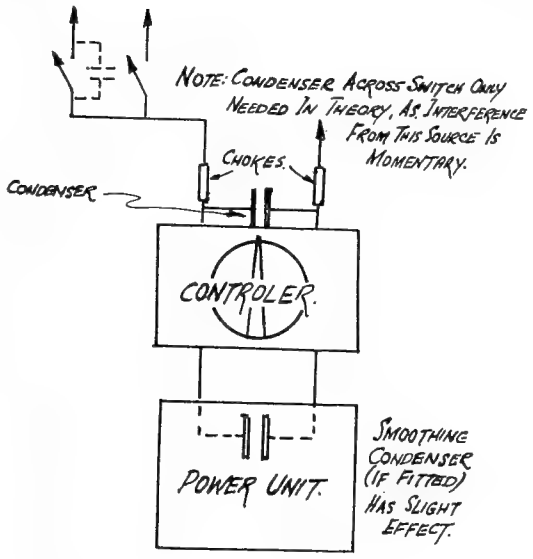

NOTE: CONDENSER ACROSS SWITCH ONLY NEEDED IN THEORY, AS INTERFERENCE FROM THIS SOURCE IS MOMENTARY.
CHOKES.
CONDENSER
CONTROLER.
POWER UNIT.
SMOOTHING CONDENSER (IF FITTED) HAS SLIGHT EFFECT.

Fig 2. POWER UNIT.

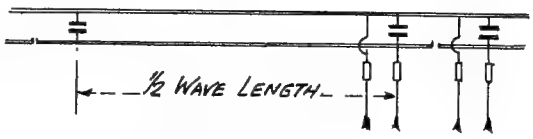


Fig 3 TRACK.

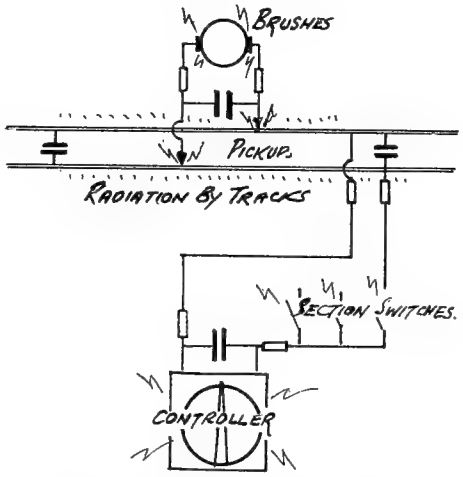


Fig. 4. COMPLETE WIRING
SHEWING MAIN SOURCES OF INTERFERENCE.

Prototype of the Month

ALDEBURGH

A RECENT visit to East Anglia prompted me to pen a few notes on the Aldeburgh branch—that eight-mile-long appendage to the old Great Eastern main line which leaves the latter a short distance on the Yarmouth side of Saxmundham and meanders through typical Suffolk countryside until it reaches the sea at Aldeburgh. Unfortunately, however, having chosen the wrong time for a holiday (like most people in 1954), weather and other circumstances made it necessary to curtail investigations, and therefore apart from a few general observations we must confine ourselves to having a look at Aldeburgh station.

As a prototype for a model of a branch line terminus Aldeburgh could hardly be bettered: in point of fact one could almost imagine that the station and track layout had been designed by a railway modeller. The station building is regular in plan, and the track arrangements should present absolutely no difficulty should anyone wish to compress them into a small space. The total length of the single platform is approximately 425 feet, of which approximately 125 feet are protected from the weather by the overall roof. The wooden signal-box is located just beyond the platform ramp, with the loco shed (out of use), coaling stage, water tank and standpipe conveniently grouped alongside: the water tank bears the date 1859 and was supplied by the well-known local firm of Richard Garrett and Sons, whose engineering works cover a large area of ground at Leiston—this being the only other fully fledged station on the branch.

Outside the station, as will be seen from the photograph, Messrs. W. H. Smith and Son have provided a bookshop; no doubt if there had been just a little more room inside the station the travellers would have had to make do with an abbreviated bookstall.

The six photographs reproduced (I hope) have been so composed that

—ex-G.E.R.

by A. G. Thomas

readers will not need to "guess what's on the other side," and reference to the plan will show the relative position of each building.

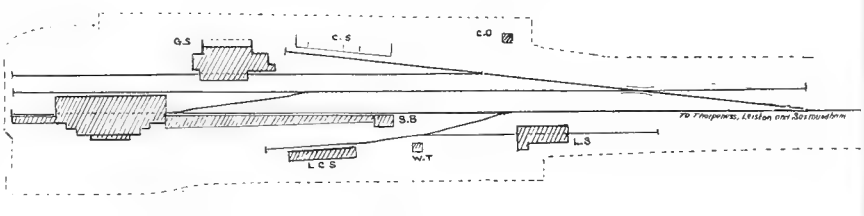
Apart from Leiston, which exists primarily for the engineering works previously referred to, there is a small halt at Thorpeness. This consists of a macadamized platform on which are mounted two antiquated coach bodies serving as a combined booking office, store and waiting room, while a short siding, with catch point, caters for what little goods traffic comes that way. Thorpeness, incidentally, has a most delightful sailing and boating lake, known as the "Mere," which deserves to be better known.

Reverting back to the branch in general, it is not possible to say how many trains per day run in each direction, for these vary month by month and almost day by day, as reference to the A B C will show. There is, however, one goods train in each direction, most of the freight being agricultural and coal, though at times there is quite substantial traffic in and out of the engineering works at Leiston previously mentioned. Locomotive power is provided at the moment by two ancients, viz. an 0-6-0 of class J15 and a 2-4-2 tank of Class F6, both of which date back to the 1880s but are still hale and hearty.

Two very interesting anecdotes might be mentioned here; first the fact that early in the present century the branch was operated by a Great Eastern tank loco bearing the number 1066, which provided for many years a never-failing history lesson for the local children, and secondly there was at one time a porter at Saxmundham station who, when the "Aldeburgh" shunted into the platform, used to shout out "Show your tickets and take your seats for the Leiston and Aldeburgh train." Unfortunately, however, it seems that on occasion, in order to enliven the day, he would amend this to "Take your tickets and show your seats"!

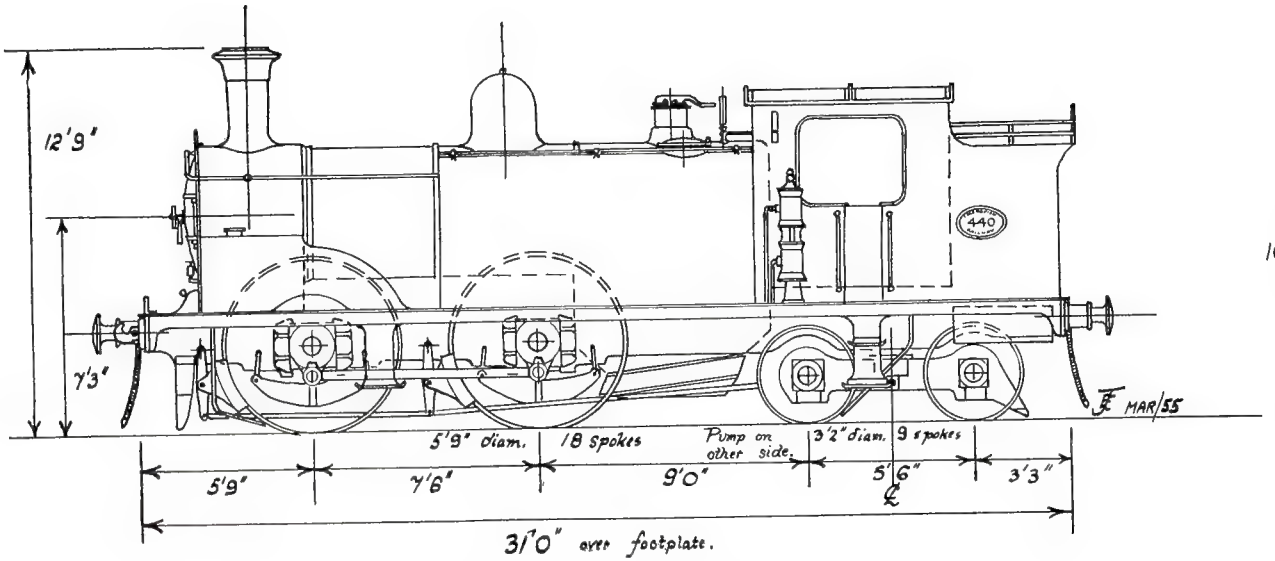
FACING PAGE, FROM TOP TO BOTTOM.
The "Aldeburgh" leaving Thorpeness Halt.
Front view of station.
Station, looking towards buffers, which are separated only by a brick wall from the main road outside!
Signal box, coaling stage, etc.

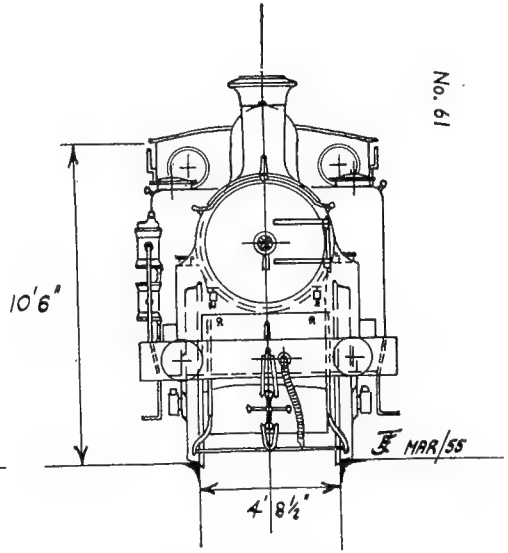
THIS PAGE, FROM TOP TO BOTTOM.
Goods depot and loco shed.



ALDEBURGH, Suffolk

G.S.	Goods shed	L.S.	Loco shed
S.B.	Signal box	L.C.S.	Loco coaling stage
W.T.	Water tank	C.O.	Coal office
		C.S.	Coal staithes





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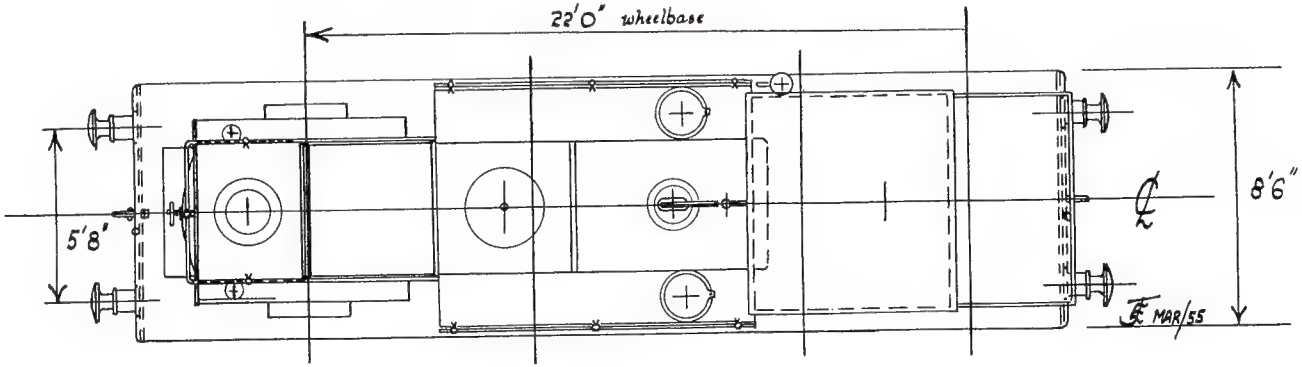
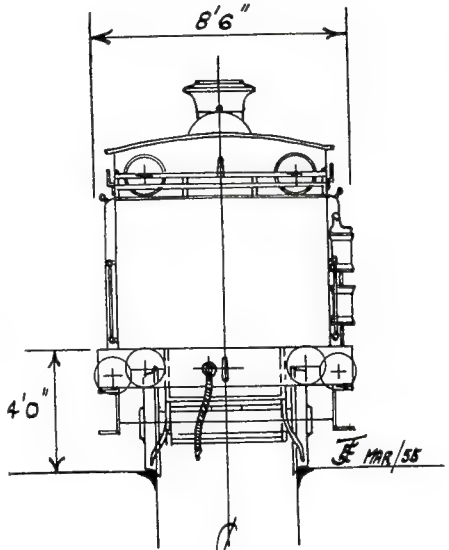


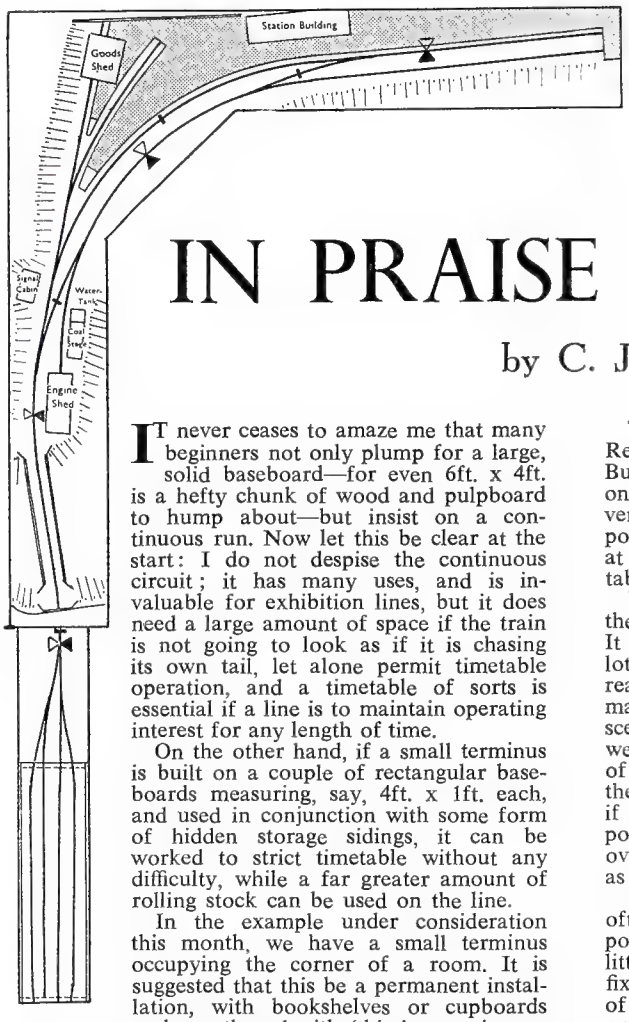


MACKINTOSH'S "439" Class 0-4-4T, CALEDONIAN RAILWAY

Drawing by J. A. N. Emslie.

All "Railway Modeller" drawings may be photostated to any scale for non-commercial use.

Layouts for the Modeller
No. 79



IN PRAISE OF THE "L"

by C. J. Freezer

IT never ceases to amaze me that many beginners not only plump for a large, solid baseboard—for even 6ft. x 4ft. is a hefty chunk of wood and pulpboard to hump about—but insist on a continuous run. Now let this be clear at the start: I do not despise the continuous circuit; it has many uses, and is invaluable for exhibition lines, but it does need a large amount of space if the train is not going to look as if it is chasing its own tail, let alone permit timetable operation, and a timetable of sorts is essential if a line is to maintain operating interest for any length of time.

On the other hand, if a small terminus is built on a couple of rectangular baseboards measuring, say, 4ft. x 1ft. each, and used in conjunction with some form of hidden storage sidings, it can be worked to strict timetable without any difficulty, while a far greater amount of rolling stock can be used on the line.

In the example under consideration this month, we have a small terminus occupying the corner of a room. It is suggested that this be a permanent installation, with bookshelves or cupboards underneath and with (this is most important) a pair of runners into which the run-round loops can be slid at the end of the day's working.

The layout is based on St. Ives, Cornwall, the principal difference being the location of the loco shed, which on the prototype is beyond the viaduct, an attractive location but one that, I felt, called for too much space. Also, as the goods sidings have been shortened, some modification of the facilities here has taken place.

Note particularly the location of the release crossovers halfway along the platform. This is a very common arrangement on small termini, and has considerable advantages, for it provides a couple of useful sidings as well as permitting several wagons and a loco to be shunted up the neck. It does not restrict the working of passenger trains, for the *average* train is perhaps but three coaches long, and can easily be handled. Longer trains are turned round either by using a pilot loco or by a double shunt; as they are exceptional workings this is no real inconvenience. In this particular case the trains are in practice limited to 2ft. 6in. by the marshalling yard.

This yard is based on principles laid down by the Rev. Peter Denny, and used with success on the Buckingham Branch. The four sidings are arranged on a separate sub-base, itself in the form of an inverted tray. This base can be bodily lifted out of position and reversed, thus turning round four trains at once without fiddling, and quite an extensive timetable can be worked out.

I will not suggest that the "L" is the best, or even the only, solution to the problem of lack of space. It is quite useless for the person who wishes to see lots of trains running at once; there is, however, no real solution to his problem other than a large permanent layout. It does not provide a vast expanse for scenic development, although in the present example we have a small viaduct, which is designed to take one of the popular timber trestle kits now available, while there is also scope for low-relief background scenery if so desired. To act as a break between the scenic portion and the "offstage" loops there is a small overbridge. This is nicely provided on the prototype, as is a small tunnel through a headland farther on.

On the credit side, this type of layout, which can often be built upon a basis of several items of the popular contemporary style unit furniture, occupies little space, and can often remain a permanent fixture; though this, of course, depends on the quality of workmanship, for while most women will tolerate or even welcome a neat, attractive model railway in the lounge, they will not be so keen to find room for a roughly finished set-up, apt to shed bits of ballast, scraps of brick paper and other odd impedimenta over the carpet. *Verb sap!*

CATALOGUES RECEIVED

Bassett-Lowke. 2s.

Bassett-Lowke's catalogue is, as always, a feast of good things, and perhaps the most comprehensive available for the "O" gauge worker. The "OO" section lists the three main proprietary systems.

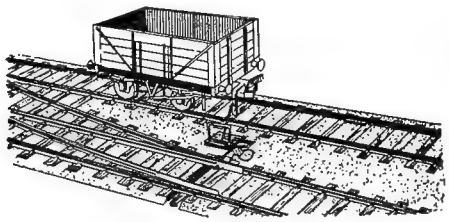
Gamages. 1s.

Gamages' catalogue is bigger than ever before, and includes in addition to model railway equipment several other modelling kits. As one would expect, the proprietary ranges receive the greatest attention.

Playcraft Toys Ltd.

This catalogue lists the wide range of Playcraft painting kits and the Playtown series of model buildings. Many illustrations are in colour.

Peco Topics



REMOTE CONTROL WITH UNI-LEVERS

WE have noticed, both from queries we receive and from visitors to our showrooms, that a very large number of enthusiasts imagine that the only really practical form of remote control is the electric solenoid motor. While this is true for the proprietary systems using sectional track that is laid and lifted at frequent intervals, points on a scale layout laid on a permanent or portable baseboard may use mechanical means. One of the most convenient of these is the Mercontrol system, and as this can be very conveniently used in conjunction with Peco tracks, Peco Simplex decoupling units and the Peco Uni-Lever, we propose to deal with it this month.

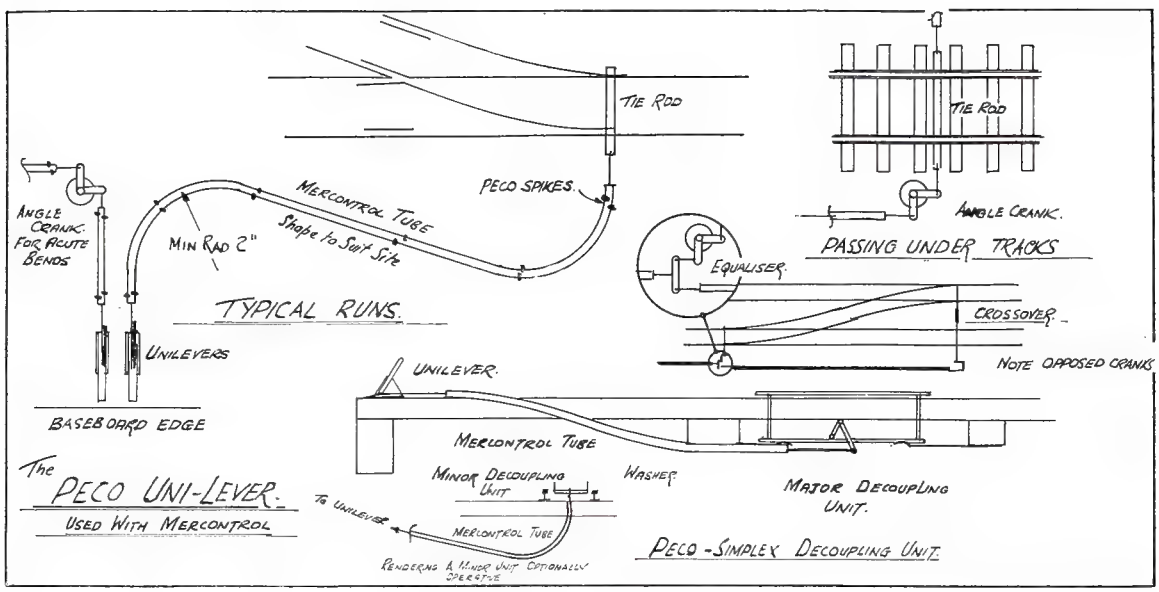
Mercontrol consists of a thin copper tube, through which thin piano wire is threaded. The piano wire should be lightly greased before insertion, otherwise lubrication is virtually impossible. The threaded tube may now be gently curved to take the throw of the lever to the point; as will be seen the principle is that of the well-known bowden cable, but, by virtue of its small size, the tubing can be used above baseboard level. It cannot, however, be curved to a sharper radius than 2in., and where circumstances call for a more acute turn an angle crank should be used.

The tubing may be secured to the baseboard with Peco spikes, but where several lengths have to run parallel it is possible to pin short lengths of strip metal underneath, to which the tube may be soldered.

Care should be taken when laying Mercontrol tube under tracks, as the metal tube can easily cause a short circuit. It is best to lay the tubing first in a shallow groove, and then cover it with ballast underlay, but this, alas, is not always possible. An excellent way out of this dilemma is to introduce a tie rod where the line of rodding passes across the tracks.

The tubing can also be used to operate a Major decoupling unit; similarly a Minor unit can be manually controlled by bringing a length of tubing under the baseboard so that the wire passes through a hole in the centre of the unit. A washer is then soldered on the end of the wire, whereupon the unit can be pulled down to an inoperative position between the tracks if desired.

The accompanying diagrams will demonstrate the many possibilities of the system.



CLUB NOTICE BOARD

featuring popular personalities and society news

Personality Parade No. 47

R. E. Barker

Tees-side Model and Experimental Engineering Club

R. E. Barker started in the hobby along the well-trodden path of the proprietary table-top railway—the Hornby Dublo in this instance. However, this soon exhibited limitations, and he is therefore currently building his first scale layout, a looped 8 plan, based on an early RAILWAY MODELLER scheme. At present little more than the track is laid; this is two-rail, progress on the line being somewhat interfered with by work on the club's layouts in "O" and "OO."

He hopes to add scenery in the near future, and in this he is assisted by his wife and his son, who are also interested in the hobby.

His other interests include photography and gardening. By profession he is an electrical engineer.

NOTES AND NEWS

Copy for these columns must be received five weeks before publication.

NEW LAYOUT, I. & W.E. M.R.C.

This occupies a space of 12ft. x 8ft. 6in., the tracks being arranged in two parallel double-track straights connected by 3ft.-radius curves at the ends. At each end is a short straight and a double junction, one of which leads on to an incline up to the main high-level station, while the other leads to the smaller station on the same level as the main tracks. The high-level station lies within the main tracks, which tunnel under it at one end, while the other lies between the main line and the spectators.

The high-level station has three main platforms and a bay for vans, etc., with coach roads. There are also a two-road loco shed and a servicing road, all connected to a turntable. A head-shunt runs parallel to the roads into the station, but on the level.

The other station has two platforms, two coach roads and a one-road shed with turntable. There is a head-shunt here, too.

Operation of points and signals is mechanical, by bowden type cable, from two lever frames for each station, the wires also working electrical contacts, so that conflicting movements are not possible. The double junctions have separate pairs of levers adjacent to them.

Scenery is partly based on buildings in Romford, and it as yet in the early stages. We hope eventually to have a fairly accurate replica of the north side of Romford market place, above the high-level station.

COULSDON MODEL RAILWAY SOCIETY

New Headquarters

The society announces that as from November 1 its headquarters are at the Coulsdon Working Men's Club, Victoria Road, Coulsdon, and that new members will be welcomed at any meeting.

Meetings are held on the first and third Mondays in each month. Full particulars from the secretary, Mr. N. Davison, Friars Oak, Bradmore Way, Old Coulsdon.

SLOUGH RAILWAY CIRCLE

Progress continues in all sections of the club's activities and the gauge "1" section was able to put on a very good show at the recent display organized by the Northolt club.

Our proprietary "OO" layout is rapidly taking shape, the line having been opened for running for some time now. Club members visited the Isle of Wight railways in mid-September and despite rather poor weather a good time was enjoyed by all. If any readers are interested in our activities we should be pleased to see them on a Friday evening at the club's premises in the Grenville Hall grounds, off Stoke Poges Lane, Slough.

MERSEYSIDE MODEL RAILWAY SOCIETY

The society's annual general meeting was held on September 30 and as a result we have a new chairman, Mr Alan Eagles, and a new secretary, Mr. Frank Weatherley (other clubs please note his address).

An exhibition committee has been formed to organize our second public exhibition to be held in the city in September 1956. During the month of September the society provided a running layout and static stands at the Garston Rotary hobbies exhibition. A stand was also erected at Chester M.R.C.'s annual event. The clubrooms at 88 Argyle Street, Birkenhead, are open every Friday night from 7.30. 16.5mm. and 18mm. layouts are under construction. Visitors are always welcome

Our programme secretary, Bob Hunter, has arranged his speakers for the season. The next Grenville Cafe meetings will be on November 18 and December 14.

All correspondence should be addressed to the new secretary, Frank Weatherley, 32 Arkles Lane, Anfield, Liverpool (tel. Anfield 4189).

BEDFORD MODEL ENGINEERING SOCIETY

The Bedford Model Engineering Society reports a decline in membership of its "OO" gauge section. This is all the more surprising as the society possesses a very fine three-rail layout and has a new two-rail layout under construction. We are assured by the secretary that any modellers living in the Bedford area would be very welcome to visit the headquarters of the society at Addison Howard Park on any Thursday evening. The hon. secretary is Mr. J. Crawley, 51 Putnoe Lane, Bedford.

If you live in the Fylde area why not join your own club? You may be of great help to other members, who also might be able to assist you to enjoy your hobby further. Annual subscription 10/6. Hon. secretary and treasurer: Mr. N. Dale, 113 Inver Road, Bispham.

NOVEMBER MEETINGS

BIRMINGHAM MODEL RAILWAY CLUB
2 Exhibition layout maintenance.
10 Jumble sale.
16 Exhibition layout maintenance.
24 Epidiascope night—members' own photographs.
30 16.5mm. layout construction.

BOLTON MODEL RAILWAY CIRCLE
9 143 Queensgate.

COULSDON MODEL RAILWAY SOCIETY
7 Chairman's trophy.
21 Running night.

FYLDE MODEL RAILWAY SOCIETY
2 Mr. A. Timins, 40 Caunce Street, N.S.
16 Mr. W Bostock, 32 Plewant Street, N.S.
30 Mr. W. Reynolds, 21 Dale Street, Cen.

HISTORICAL MODEL RAILWAY SOCIETY
14 L.N.W.R.—prototype and model. By Mr. G. H. Platt.

HODDESDON AND DISTRICT MODEL RAILWAY SOCIETY
9 Further track wiring problems
23 Visit to a club member's layout.

HULL MINIATURE RAILWAY SOCIETY
3 Ten-minute talks.
10 Track night.
17 Footplate experiences. A talk by Mr. L. F. Dalton, locomotive driver, British Railways.
24 Track night.

MODEL RAILWAY CLUB
3 Track night. G.W.R.
17 Rummage sale.
24 Track night. Pre-grouping models, all groups.

NORWICH AND DISTRICT SOCIETY OF MODEL ENGINEERS
9 Competition night.

WIMBLEDON MODEL RAILWAY CLUB
2 Pullmans, by Mr. S. Nuttman.
23 Prototype to model, by Mr. J. Gardner.

NEWS AND VIEWS OF TRADE INTEREST TRADE

DIESEL RAILCAR KIT

We are pleased to note that Ratio are right up to the minute with their new kit of the B.R. two-coach railcar sets, which is a worthy addition to the range. In common with their kits previously reviewed, the sides are punched from birch ply, with machined wood roofs and floors. Solebars are grooved wood and $\frac{1}{32}$in. ply ends are provided, pierced for windows. Glazing is included. A drawing is enclosed, giving internal and external details of the cars. The assembled kits were illustrated in last month's Ratio advertisement, and we are reproducing this drawing in reduced form below.

WOLF CUB PRICE REDUCTION

In these days of rising prices, a reduction in cost is always a welcome trend, and we are therefore happy to announce that, due to increased production and improved methods, Messrs. Wolf Electric Tools Ltd. have been able to reduce their popular "Cub" $\frac{1}{4}$in. capacity drill by 10s. to £5 9s. 6d.

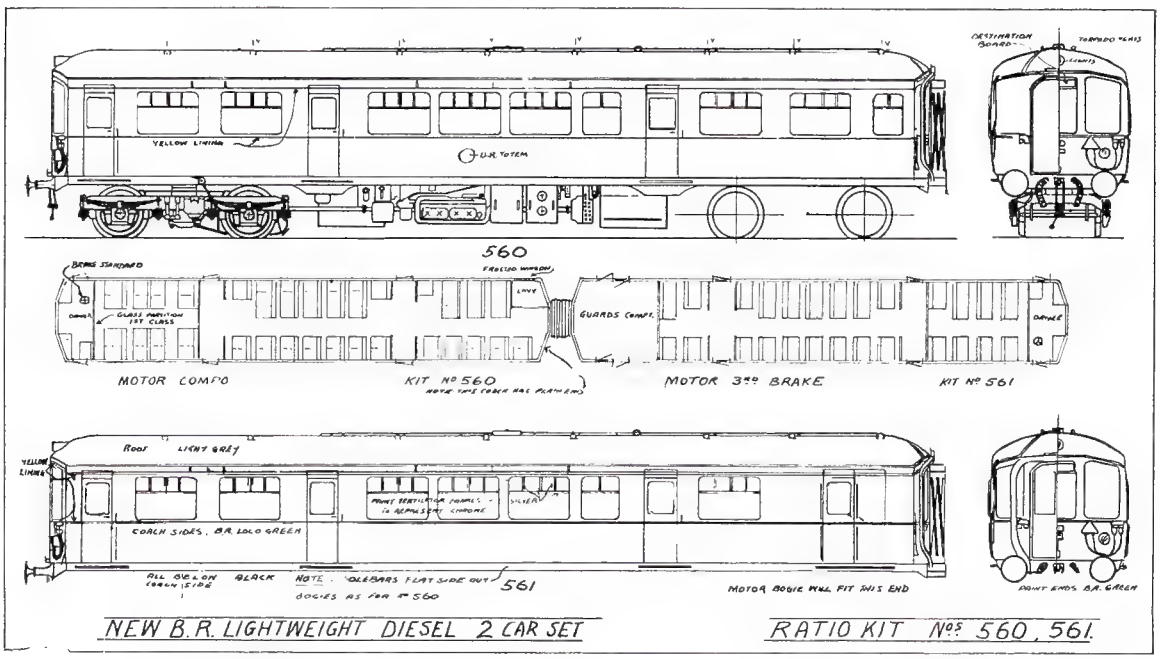
As readers probably know, the Wolf "Cub" drill forms the basic element of a wide range of power tools, including wood-turning lathe, drill press, saw table, fretsaw, etc. Two recent additions are the bench planer and bench sander. The latter fitment is particularly useful where small wooden items have to be finished smoothly and accurately. An immediate use that springs to mind is the finishing of wooden coach bodies.

EXLEY REORGANIZATION

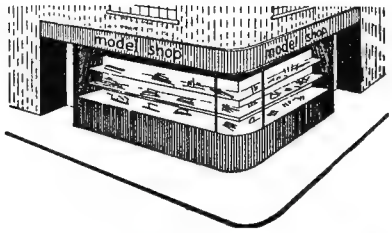
We have been asked by Mr. Boyd-Carpenter to announce that the production and sales departments of Edward Exley Ltd. will be entirely separate, that is to say the situation will revert to that existing prior to November 30, 1952. Messrs. Edward Exley Ltd., of Baslow, will continue to supply goods to all their dealers, agents and distributors. The manufacture of Exley coaches will continue at the Bradford works under Mr. Edward Exley, who will fix the prices of all goods.

It is regretted that the cost of certain Exley coaches must be increased, but it is pointed out that there have been no such rises in the past few years, despite ever-increasing material, labour and overhead charges. Full details will be found in the October Exley catalogue.

It has been decided to introduce a range of coaches in B.R. livery consisting of the existing standard company coaches, painted in the appropriate colours; no B.R. types are at present contemplated. The prices will be the same as the standard Exley company coaches.



WINDOW



A NEW POWER UNIT

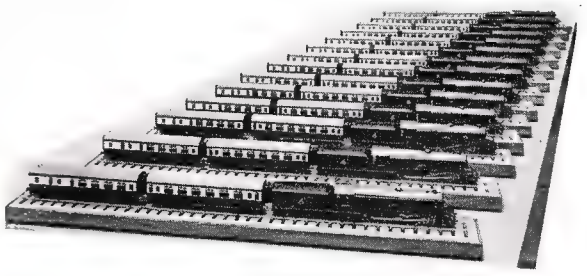
Messrs. Grange Electrical Instrument Manufacturers have submitted for our inspection a novel power unit of considerable interest. As can be seen from our illustration, it has the conventional controller knob, with separate reverse switch, a couple of indicator lights and a most unconventional array of push-button switches along the top. These are marked "Stop," "Low," "Medium," "Normal" and "Speed," and enable the operator to select different ranges of control. For the technically minded, we quote the manufacturers' own remarks on the internal design:

"We have made over the past few years a detailed study of the electrical efficiency of small electric motors and their behaviour in respect of the rather complex electrical characteristics of metal rectifiers. By careful calculation with specially designed components we have made use of the fluctuating electrical build-up in these rectifiers when used without condenser smoothing, thereby providing a smooth ripple on the two lower speed buttons.

"This system has been tested on the most delicate electrical equipment, and we have found that it not only provides the necessary boost required to keep a miniature three-section commutator in motion, but has greatly increased the life of the carbon brush mechanisms, and helped to keep the commutators electrically efficient for indefinite periods without overhaul."

This means, in practice, that a locomotive can shunt, and make a realistic start on either of the two lower buttons, and then be brought up to speed supply by pressing first the normal and then the speed buttons. The effect is analogous to a car's gearbox, although this parallel is not altogether exact, as this unit can remain at any setting indefinitely.

The external finish is to first-class instrument standards; the maximum output is 2.8 amps at 12 volts D.C., with a separate 14-volt A.C. output. This is a high-quality production, a fact which is reflected in the price, but we feel sure that the exacting enthusiast will be wholly satisfied with it.



MODELS FOR PUBLICITY

Our illustration shows a selection of display models which Bassett-Lowke have produced for British Railways, the intention being to exhibit them in the windows of travel agencies. Each exhibit consists of an A3 "Flying Scotsman" Pacific with two Bassett-Lowke B.R. coaches, mounted on a length of "O" gauge track.

NEW DRAWING RANGE

A. & G. Drawings, of 167 Brighton Road, South Croydon, are specializing in drawings of "unusual" railway vehicles, to a scale of 4mm. to the foot. The first two are of Kent and East Sussex railcars; we are told that other railcars are planned, including main-line types. The dye-line prints are clear and neat: brief but adequate details of livery, numbering and history are given, together with the rather refreshing admission "As this drawing has been largely made with the aid of photographs extreme accuracy cannot be guaranteed." As it is normal practice to use photographs to aid the usually scanty information to be found on these out-of-the-way prototypes one cannot criticize the procedure, but only applaud the honesty of the publishers, who have a fine appreciation of the ethics of historical recording.

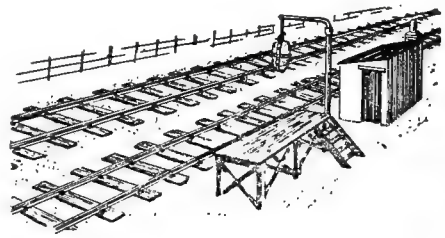
TRADE ANNOUNCEMENT

Halfone Models wish to announce that, from September 17 last, they have been forced to close their retail shop at 16 Victoria Arcade, but for the time being mail orders will be fulfilled from their registered offices at 8 Methuen Street, Manchester, 12.

OUR CHRISTMAS NUMBER will be better than ever. Order your copy now to avoid disappointment.

Publishing date December 1

READERS' LETTERS



This space is reserved for the free exchange of readers' ideas and opinions

"TT" GAUGE

It has often puzzled me why "TT" gauge has never caught on in this country. The Rokal system proved that smooth, reliable running is entirely possible in this scale, and it certainly would enable the enthusiast with limited space to have a comprehensive layout system without the unrealistic sharp radii of a cramped "OO" system.

I think the Rokal trains failed in this country for two main reasons: first, the very high prices compared with "OO" proprietary makes; second, the fact that they were of continental prototypes, which have little appeal to British enthusiasts.

What is needed to put "TT" on the map is a proprietary British system by a large toy manufacturer who could keep prices on a par with the "OO" commercial sets. Using scale or near scale rolling stock, this would form the nucleus of a new branch of the hobby. Flexible track, spiked track and wheels, plus all the usual accessories, could be cheaply produced by the trade.

To my way of thinking, "TT" models of British prototypes would be an instant success. Surely this is an opportunity which is being overlooked by the model and toy manufacturers.

Newcastle-upon-Tyne. P.B.

While P.B.'s letter does set out most of the reasons why so far "TT" gauge has not caught on in Britain, it is as well to remember that in the United States of America, where one enterprising manufacturer has put on the market a complete range of track, components and, more important still, locomotive kits, the gauge has hardly established itself despite its apparent advantages.

This is largely because there are so many "HO" kits of such high quality available that the average beginner in the States prefers to use the larger gauge despite space difficulties. A case really existed in Britain before the war, when "O" gauge was more popular than "OO" simply because there was a slightly better supply of "O" gauge parts and finished components. It does seem that most people choose a gauge which offers them the greatest potential choice of equipment, even though few people are in a position to accommodate, let alone purchase, more than a small fraction of it.

Therefore it is inevitable that the gauge with the greatest supply of components will be the most popular, thus making it more certain for the manufacturer that he can sell his goods in that gauge. In recent years, moreover, there has been a shift in the hobby from the pure modeller of pre-war days, who made the majority of his equipment in his own workshop, to the person who prefers to use proprietary equipment and kits. This has accentuated the snowball effect to such an extent that in the U.S.A. a recent survey showed that over three-quarters of the active workers taking a popular magazine were modelling in "HO" gauge.

We have never attempted such a survey ourselves, as we are doubtful of the true value of a postal vote which rarely covers one per cent of the hobby, but from other factors we would suggest that between seventy-five and eighty-five per cent of serious enthusiasts in this country are committed more or less deeply to 4mm. scale.

As the potential market for a new scale can in the main lie only in the beginner, it is most unlikely that anyone could establish "TT" gauge on a large scale. It is as well to remember that the first introduction of "OO" in this country took place over thirty years ago, yet the gauge did not become fully established until the middle thirties.

Furthermore, while "OO" became established because it was frequently quite impossible to model "O" gauge satisfactorily in a small house, the same argument cannot apply to "TT," for, as has been shown repeatedly in the columns of this magazine, a "OO" layout can be constructed in a very small space. We would in particular refer readers to the April issue, where Mr. Charman described his branch line terminus, which is situated in a caravan.—Editor, R.M.

CARDBOARD ROLLING STOCK

With reference to Mr. J. Tootell's article on cardboard rolling stock, I think that the difficulty he has had with scribing planking could be overcome by a slightly different method of construction. My own sequence of operations is as follows: shellac card (two coats on both sides), scribe, cut out voids (windows and portions between framing), cut out parts, shellac edges, and assemble. I find it much more convenient to use a ready mixed shellac sold under the name of button polish at most decorators' supply shops. With a little luck and the Editor's permission I hope to be able to publish some photographs of my work in this field in the near future.

Birmingham. "SMOKEY" BOURNE.

NARROW GAUGE

I read with interest your reply to the problem of the narrow-gauge scale to gauge ratio, and would like to add a few comments.

With regard to 8mm. scale on "OO" track, I do not think that it requires an unduly large expanse. I have constructed a model of Portmadoc station (Festiniog Railway) and a return loop in a room only 8ft. x 9ft. Besides, stock in this scale has sufficient

" body " to give the model a prototypical atmosphere —a feature that smaller models lack. Furthermore, Welsh locomotives are exceptionally small, witness " Welsh Pony " and sisters, and the problem of making a satisfactory mechanism in such a locomotive is quite acute.

The idea of using 6mm. scale on " TT " track seems reasonable. It has the advantage that many " OO " parts—axleguards, complete wagon sides, boiler fittings and cylinders—can be used or adapted if " HO " parts can be secured from the U.S.A. or Rivarossi or Kirdon models are employed.

Unless a person is well schooled in the art, it does not seem advisable to start off by attempting a Welsh narrow-gauge engine in the minute scale of 4mm. 6mm. is quite different and is, I believe, well worth at least a tentative experiment.

Chorltum-cum-Hardy. DAVID E. LLOYD.

IT KEEPS FALLING OFF !

It is a pity that Mr. Broom (September issue) did not read my articles more carefully before misquoting them. I did not say that I " tested my track satisfactorily with a pair of wheels on an axle." I said that the most important piece of test equipment was a fair-sized piece of common savvy, that ninety-five per cent of the causes of derailment could be found with a millimetre rule and a track gauge, and that an accurate pair of wheels on an axle was *another* useful piece of equipment, as it showed up clearly the effect of errors in dimensions. I mentioned its use for tracing irregularities in rail alignment (June, p. 134) and for examining check and frog gaps (July, pp. 159, 165).

The main theme of the articles was that vehicles do not derail from gremlins, temperament or affinity for the sleepers, but because something is wrong, and that the cure lies in systematic checking of the vehicles and track so as to trace the exact fault and then to remedy it. Mr. Broom uses vehicles to check the accuracy of his track-laying, and I suggest that he re-reads the cautionary tale in the June issue. He can then measure the " skew-wiffery " of his stock and " hunky-dory-fy " it, if I follow his technicalities correctly.

London. P. E. BARNES.

UNIVERSAL POINTS

Referring to the letter on universal points by Mr. John H. Ahern in the September issue, I would like to endorse his statements heartily. I have used this type of point for almost as long as he has, and have found that the running is trouble free and the appearance not at all objectionable.

They are standard on the " TT " layout which I am constructing and it may be a point of interest that in this case they are controlled from the frog end, the point blades not being connected together at all. By so arranging matters that the blade meets the stock rail just before the other end closes the frog, a good electrical contact is made, thus doing away with the necessity for switch contacts.

As the controls are below the baseboard it is not therefore apparent that the setting is done from the " wrong " end.

Port Glasgow. ERIC S. CRILLEY.

AS OTHERS SEE US

I chanced upon the following editorial comment in the June issue of the *Aeromodeller,* which I thought might amuse readers:

" We recently had the opportunity of taking a brief look at the Model Railway Club Exhibition in London. Our strongest reaction was, 'Thank goodness that aeromodellers take their hobby with a touch of humour.' The models on show were frequently exquisite in workmanship, but their owners were, generally speaking, the most depressed-looking people we've ever seen! We don't always approve of some of the hysterical tomfoolery which is occasionally, regrettably, seen on the flying field, but we do like to see characters looking as though they enjoy their hobby. But then perhaps aeromodelling appeals only to optimists."

Can such a sweeping statement be true?

Luton. P. L. GRAY.

[The statement is quite without foundation; some people have a greater sense of humour, that's all. However, we do feel that, whatever one's private opinion may be, comment on another chap's hobby and the way he carries it out is not good material for an editorial.—Ed., R.M.]

BOOK REVIEWS

TRAINS ANNUAL. Edited by Cecil J. Allen. (Ian Allan, 9/6.)

Trains Annual has gained for itself the reputation of presenting a collection of first-rate long articles on railway matters, together with a large number of brilliant railway photographs. This year's offering is fully up to standard in every respect, and is to be recommended.

The articles include " The Gresley Touch," by Norman McKillop; "Along the Welsh Border," by G. Freeman Allen; "Alpine Railway Wonderland," by Cecil J. Allen; " The Royal Scot," by Charlton Lilley; " Through the Norwegian Mountains," by P. Ransome Wallis; " Locomotive on Shed," by Balmore; " Lone Locomotives," by Cecil J. Allen; " The Trans-Australian Railway," by Marcus Newman; " The Metropolitan Railway," by H. A. Vallance; " The Fastest Train on Earth," by " Quicksilver "; and " An R.T.O. Remembers," by D. S. M. Barrie.

With so varied a selection to choose from, the reader is bound to discover something of interest, but the reviewer is hard put to it to find a subject for his review. Should he praise this article or that? Should he confine his remarks to the subjects he is familiar with, or deal with those that, by breaking fresh ground, had an added interest? We do not know. Suffice it to say that we enjoyed the book, and have no doubt that others will do so in their turn.

TRAINS DIARY. Ian Allan, 3/6.)

This diary follows the usual pattern of specialized pocket diaries and contains, in addition to the normal layout of four days per page, a twenty-six-page section giving much useful data on British railway systems.

ADVICE BUREAU

The Bureau is at your disposal to assist you with your problems. The service is free, individual and personal, but we reserve the right to publish any query we consider to be of interest. The advice given is based on the experience and opinions of our staff.

Queries should be addressed to the Peco Technical Advice Bureau, Pecoway, Station Road, Seaton, and should be accompanied by a s.a.e. and coupon on page xi. We regret that we cannot prepare special designs for individual readers.

I would be very grateful if you could explain a method of eliminating the sudden burst of speed at points where the locomotive bridges the gap between two controllers with individual power supplies. The spurt is most noticeable with locos of long wheelbase, as the increased speed is held longer. The effect is unrealistic and with slow goods trains is heard if not seen!

Also, has anybody worked out how many "OO" hours there are in an hour?

C.N.J., ST. LEONARDS-ON-SEA.

We should, first of all, congratulate you on your acute observation, as few people notice this rather unfortunate occurrence.

The cause is a defect inherent in the system you are using, for you will realize that while the locomotive is bridging the gap it is receiving current from two sources, and the effective resistance is thereby lowered. The fact is further aggravated if the two controllers are not exactly matched. This is something which is almost impossible to achieve in practice, due to the fact that minor variations do occur even in the most carefully constructed electrical equipment. The cure is to adopt cab control, whereby the locomotive travels through its entire course on the same controller. We note that you have individual supply, and therefore you will require only a little additional switchgear and a slight rearrangement of the wiring to achieve this. We feel sure that you will find the improved flexibility achieved with cab control well worth the change.

Your last paragraph, referring to scale time, brings in a very thorny problem. Time can be scaled; in fact where models are being used to determine the problems of full-sized equipment it must be scaled if true results are to be obtained. You have only to consider the hypothetical case of a working 4mm. scale grandfather clock to realize that if the pendulum were exactly to scale length the clock would run at "OO" scale time. Unfortunately our own perceptions of time are unalterable, and although we can accommodate differing linear scales we are totally unable to appreciate the compressed time scale that our railways should run on. This is rather a pity, because if we could by some means carry out this mental adaptation we could obtain several scale hours operation in an actual time of less than an hour.

What is the quickest way of fixing Hornby Dublo track to a baseboard of fairly hard timber? I have been using ordinary half-inch wood screws, but find this slow and tedious, and even a small screw-head may catch the centre rail.

A.P.O'C., DUBLIN.

We know of no other reliable method of fixing them than screws. If a softboard baseboard is used, it is possible to tack the track down with half-inch nails, but due to the extra force needed to insert these nails in the timber, and more important still the force needed to withdraw them, we cannot recommend this simple course in your case. Screws are the only really practical fixing for the conditions you describe.

I have a home-made ex-L.N.E.R. J50 class loco. Unfortunately my layout is Southern, and I have until now had the J50 painted in Southern green, with "Southern" on each side tank. I was quite happy about this until a knowledgeable friend called and said "That's an L.N.E.R. loco!" I had to admit it was, and have now decided that even though my layout is Southern it will have to have an L.N.E.R. loco on it. I would be glad, however, if you could tell me in what colours a J50 class was painted during the period 1935-36, which is the period on which I have based my line.

R.J.R., BORDON, HANTS.

According to the best information at our disposal, these locomotives were in the immediate pre-war years painted unlined black with the letters L.N.E.R. on the tank sides. The exact livery of most locomotive classes, other than express, is a little difficult to discover, as very few people seem to have taken record of the actual as opposed to official schemes employed. As you will no doubt have noticed from the queer schemes that have turned up on British Railways from time to time, the official scheme is somewhat garbled by the time it comes out of the paint shops.

I have found that by laying a pair of pliers on the top of my locos they can pull with ease where they usually stand still and make a lot of noise about nothing. How can I put the weight in and what is the best material to use? There is not much room.

T.G., HYTHE.

The most suitable material for increasing adhesion weight in a locomotive is lead. Lead ballast weights generally take one of three forms. The first and most elaborate form consists of special castings designed to fit into the space provided. These can often be cast in simple wood moulds, as only one of each casting is usually required.

Alternatively, the lead may be purchased in sheet form and rolled and bent to occupy the required space.

The third system, which is somewhat simpler, utilizes lead shot mixed with a suitable retaining medium such as modelling clay, which can be forced into the cavities in the locomotive and will remain in position.

Another method which is growing popular is to use a low-melting-point alloy known as Cerrabend. This will melt in warm water and can be poured into the locomotive body without damage, but as Cerrabend is not readily obtainable and is somewhat lighter than lead most people prefer the former methods.

EDWARD EXLEY LTD.

THE RIDGE, EATON HILL, BASLOW, DERBYSHIRE

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We can TRAIN you with the right COACHES

EXLEY COACHES "MAKE" A MODEL LINE

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Vehicles for pre-grouping lines and G.W.R., L.M.S.R., S.R., L.N.E.R., B.R.

Trade inquiries invited

TRADING IN FOUR REIGNS

CHRISTMAS IS COMING—

and the finest present for "Junior" is still a "OO" electric train set from the Tri-ang sheds. He would be delighted with any of those listed below, and they are all realistic models, fully guaranteed and COMPLETE with oval of track, variable speed control, power and uncoupling rail.

R.2X 0-6-0 Tank Passenger Set 78/6
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R.1X 2-6-4 Princess Passenger Set 93/6
R.7X 2-6-4 Transcontinental Passenger Set ... 119/6
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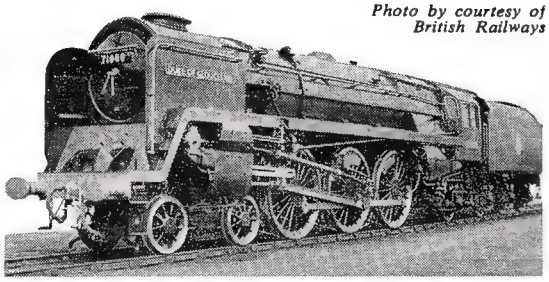

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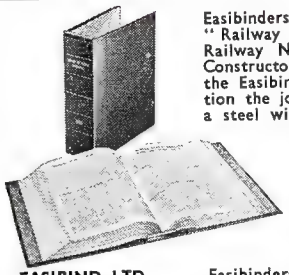

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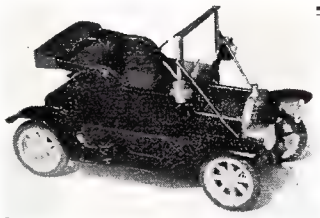

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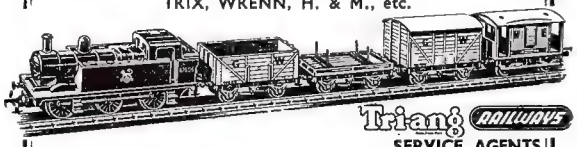

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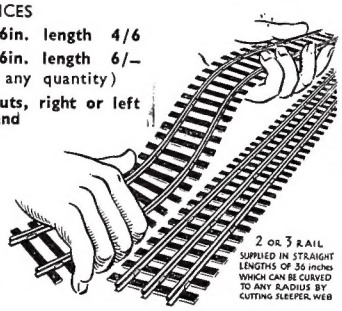

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TWIN TRIX SETS, including double output transformer controller and 915 track formation, £8/10/- (list price £12/6/-); sets with power supply unit, £6/17/6; 0-4-0 locos, 45/-; B.R. 4-6-2 Pacifics, £5/10/- and £6/19/6; American locos, £3/10/-; rails, 1/6; hand points, 13/6; remote points with switch, 17/6 and 22/6; B.R. scale coaches, as new, 12/6; double output transformers, 37/6; **unused** rails, 2/-.

HORNBY DUBLO train sets, including transformer controller, £6 to £9 (guaranteed with free replacement). Locos and tenders: Silver King, 57/6; Duchess Montrose, £3; L.M.S. Duchess Atholl, 57/6; L.N.E.R. (blue) Sir Nigel Gresley, 55/-. Rails, 2/6; half rails, 1/6; quarters, 1/3; uncoupling rails, 3/6; hand points, 7/6; L.N.E.R. coaches, 7/6.

GRAHAM FARISH two-rail bargains: Brand-new 4-6-2 Merchant Navy locos and tenders, £4/15/-; wagon lit Pullman coaches, 19/6 (list price 30/-); suburban coaches, 19/6 (25/-); New York Central coaches, 17/6 (25/-). S/H items: 4-6-0 King locos, £4/10/-; Merchant Navy locos, £3/19/6; Prairie tanks, £3; GP5 4-6-0 locos, £3/10/-; 2-rail wagons, 2/6; power units, 40/- (65/-); 4-6-4 New York Hudson locos, £6.

NEW GAUGE "OO" 0-6-0 G.W.R. Pannier Tanks No. 5700, 2-rail, suitable Wrenn or Tri-ang tracks, 47/6; 3-rail, suitable Wrenn or H/Dublo tracks, 52/6 (H/D couplings 3/6 extra).

EXLEY brand-new "OO" coach bodies: G.W.R. dining, 35/-; G.W.R. ocean mails, 30/-; G.W.R. and L.M.S. 4-wheelers, 19/6 (list price 30/11); G.W.R. and L.M.S. 6-wheelers, 25/- (list price 38/6).

GAIETY S/H 2-rail B.R. 0-6-2 tank locos, 45/-.

HORNBY GAUGE "O" c/work tank goods sets, 37/6; passenger, 40/-; goods rolling stock, 12 types to clear, 2/6 each.

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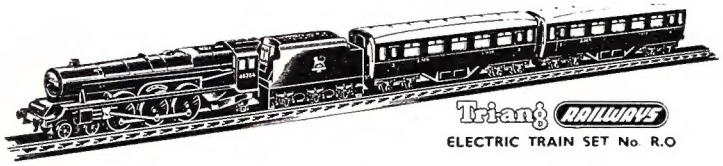

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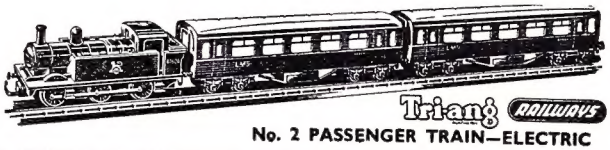

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Platform Extensions **4/10**

Please send s.a.e. for illustrated leaflet.

133 THE BROADWAY
MILL HILL, N.W.7

"BOBBYS" M.E.T.A. *(Scale Model Railways)*

"O" GAUGE: Bassett-Lowke 4-4-0 Prince Charles and tender, clockwork £5/5/-, electric £5/7/11 (blue or green). 4-4-0 compound and tender, electric, £8/0/5. Standard 0-6-0 tank loco, £8/17/4. Leeds boxed goods set, £7/7/-. Sevno low-relief kits—inn, shops and offices, cafe, 10/6 each. Kit for platelayers' hut 7/11. Sevno building papers, 5d. each (full range). B/L scenic background, set of four sheets, 12/6. Mills cast-iron wheels (two wheels on one axle), 2/11, fine or coarse scale. W. and H. brass wagon buffers, sprung, 10½d. each. Catalogues: Bassett-Lowke 2/-, Mills 1/-, Walkers 6d., Exley 1/6, Scaloh 1/-, CCW 1/-, Ratio 1/6. Exley coaches in stock. Etc.

"OO" GAUGE: NEW TRIX JUNIOR TRAIN SETS complete with track and generator, goods set (205) £5/17/6, passenger (215) £6/6/-. Trix lighted signal box with whistle, suitable for all "HO" layouts, 27/6. Trix train whistle set £3/3/-. Tri-ang 4-6-4 tank loco 52/6, 0-6-0 tank loco 31/3, Princess loco 4-6-2 39/6, tender 4/8. All Tri-ang spares in stock. Tri-ang official service agent. Full range of Tri-ang and Trix in stock all the year round. Peco wagon kits 6/11. Ratio signal box kits: No. 1, hip end, 5/10; No. 2, gable end, 5/10. S. & B. yard crane, 9/11. Rivarossi diesels in stock. Hamblings 0-6-0 diesel kit, 21/-. Essar mechanism for same, 87/6. Hamblings and Exley coaches. All new items by Gem, Wrenn, Peco, etc. Kirdon universal couplings, 2/- per pair. Kirdon 10000 main line diesel loco (2- or 3-rail), £5/12/-. Marklin 4-6-2 loco and tender F800, £9/3/-. Catalogues: Trix 2d., Manual 2/6, Jamieson 1/-, Gem 1/-, Hamblings 1/-, Scenic 9d., Anorma 1/6, Exley 1/6, Walkers 6d., Ratio 1/6, Peco 1/6, H. & M. 3d., Kirdon 5d., CCW 1/-, Bradshaw 1/6, Rivarossi (when available), Tri-ang 3d.

"TT" GAUGE: 4-6-2 (Rokal) loco and tender, £7/18/6. No "TT" lists at present. Peco F.B. nickel silver rail, 4/8 per 12 18in., lengths. Peco tied sleeper strip: "TT" 4/5 per 6 feet, "OOO" 4/11 per 6 feet.

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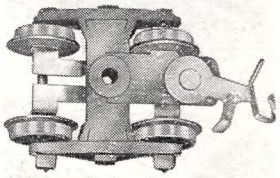
BRADSHAW MODEL PRODUCTS

present this month the following EXCITING items ...

NUCRO COACH BOGIES

FOR SMOOTH, EFFORTLESS RUNNING !



The new Nucro bogies now being delivered are being manufactured with a new type of stronger metal and should prove even more satisfactory than previous types. Due to the increased cost of raw materials, it is regretted that the price has had to be increased to **8/9** per pair.

R/251	G.W.R. Churchward Scale wheels ...	... Per pair **8/9**
R/252	G.W.R. Churchward Dublo-type wheels	... Per pair **8/9**
R/253	L.M.S. Standard Scale wheels ...	... Per pair **8/9**
R/254	L.M.S. Standard Dublo-type wheels	... Per pair **8/9**
R/260	G.W.R. High capacity Scale wheels	... Per pair **8/9**
R/261	G.W.R. High capacity Dublo-type wheels	... Per pair **8/9**
R/262	L.N.E.R. Diamond Frame Scale wheels	... Per pair **8/9**
R/263	L.N.E.R. Diamond Frame Dublo-type wheels	Per pair **8/9**

NUCRO WHEELS FOR "EM" GAUGE

In response to many requests. Nucro have now introduced their range of scale wheels for "EM" 18mm. gauge operation. These are available at the same prices as the popular 16.5mm. types, and are now available from your local model shop.

ER/109	12mm. 3-hole wheels	... **1/4** per 2 pairs
ER/110	12mm. spoked wheels ...	... **1/6** per 2 pairs
ER/111	12mm. disc wheels	... **1/4** per 2 pairs
ER/113	14mm. disc wheels	... **1/4** per 2 pairs

NEW ITEM MM.77

Available from stock, the new beautifully detailed Mastermodel Double Track Girder Bridge. No. 77 Double Track Girder Bridge, **12/6** each.

B.M.P. COLOUR LIGHT SIGNALS

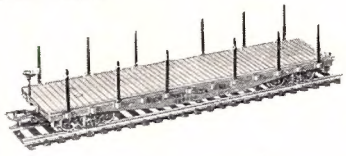
These colour light signals are now available in three types—ground, standard and 2-head.
All three types are available with 14-volt pea bulbs, and the standard and ground types are also available with 2.5-volt pea bulbs.

GROUND TYPE

2 - aspect standard signal, 2.5-volt pea bulbs	**11/–**
2 - aspect ground signal, 2.5-volt pea bulbs	**11/–**
2 - aspect standard signal, 14-volt pea bulbs	**12/3**
2 - aspect ground signal, 14-volt pea bulbs	**12/3**
2 - aspect two-head signal, 14-volt pea bulbs	**19/10**

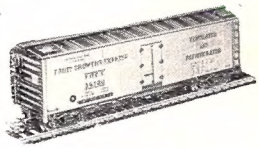
2 NEW RIVAROSSI WAGONS

FLAT CAR



This is a model of an American prototype flat car, and is supplied complete with stakes to fit in the side of the wagon, and also fitted with the fully compensating and sprung Rivarossi bogies. HT/2 flat car, price **19/10.**

BOX CAR



Here is a new wagon for your layout ! A model of an American box car, again fitted with Rivarossi automatic couplers and fully sprung and compensating bogies. HT/3 box car, price **32/8.**

AND A 2-RAIL DIAMOND CROSSING

This new 2-rail diamond crossing by Rivarossi is suitable for use with any "OO" gauge flat bottom rail track. It is beautifully made, all dimensions being to B.R.M.S.B. standards.

RIS Diamond crossing **21/4**

Also available two new items of Rivarossi track.

RD10 ½ straight rail ... ... **2/2** each
RC120½ ½ curved rail ... ... **2/2** each

WE ARE SOLE DISTRIBUTORS FOR ANORMA RAILWAY PAINTS

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G.W.R.		
Brown	White	Brown Bauxite
Grey	Loco Green	Thinners
Green	Coach Green	Varnish
Cream	Orange	
	Grey	**L.M.S.**
B.R.	Red	Maroon
Crimson Lake		Wagon Grey
Cream	**S.R.**	
Black	Malachite Green	**L.N.E.R.**
Gold	Wagon Oxide	Green
Light Blue	Matt Black	Wagon Grey
	Matt White	Blue

THE CALEY SOLENOID MOTOR

The Caley Solenoid Motor is precision made and has several advantages over the conventional type. It is self switching, thus needing only one contact such as a push button, and after each operation it is automatically set to the next movement in the opposite direction. The motor works from 12 volts A.C. or D.C. and consumes less than one amp. It is already taped for fixing and also provides ample throw for all conventional type points. The Caley Solenoid Motor **12/6** each.

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